Conversing with Island Mangroves: Towards a New Story of Humanity's Relationship with the Earth

Terra L. Sprague

A dissertation submitted to the University of Bristol in accordance with the requirements for award of the degree of PhD in Environment, Energy and Resilience in the Faculty of Social Sciences and Law.

May 2019

(69,610 words)

Abstract

The old story of humanity's relationship with planet Earth, one characterised by domination, disposability and inattention to equilibrium, no longer serves us. Humanity needs a New Story about its relationship with the Earth for the age of the Anthropocene in order to cultivate responses to environmental change which are not rooted in fear. This thesis contributes to the project of writing that New Story through a narrative inquiry into the concerns and responses of islanders from Fiji, Mauritius and St Lucia to their changing environmental conditions.

Grounded in Deleuze's concepts of multiplicity, the rhizome and mapping, the thesis draws further inspiration from Pacific Island concepts of *Sokota* (voyaging) and *Talanoa* (dialogic inquiry) methodology. The narrative analysis brings together the contributions of a range of participants, gathered over the course of six site visits to Fiji, Mauritius and St Lucia, by creating a set of conversations within a metaphorical mangrove forest. This mangrove forest represents the multiplicity of local perspectives in these islands and becomes the site of conversation and story-telling. As such, it becomes a literary tool through which the inquiry's participants, who are otherwise mostly unknown to each other, are connected on the page through sharing folktales and discussion of current experiences and offering insights and messages to others.

The conversations answer three primary questions: what are the pressing environmental concerns in these island nations; what have been some of the responses to those concerns; and, what are the messages that islanders wish to convey to themselves and others regarding what actions need taking. Through these conversations, a number of themes arise, including trust in nature, resisting fear, identifying barriers to resilience, citizen led responses to environmental issues and an approach to blending different knowledges for strengthened responses.

As well as contributing elements of a New Story of humanity's relationship with the Earth, the thesis offers a methodological contribution to the global pursuit of that New Story. It first listens to a multiplicity of perspectives, then engages in conversations before going deeper to acknowledge that matters of human equity underpin today's environmental issues. It builds and presents its analysis using metaphor and through constructing dialogue in order to blend different knowledges. It argues that the development of a New Story about humanity's relationship with the Earth is one that must be collectively written and shared in order to meet the environmental challenges of this day, and that narrative inquiry can help us to do this.

Dedication

For Oliver
Because what this world needs more than anything is abundance of love and compassion. This flows from you freely. May it never stop - it will be a key to the New Story.

For Anoush
Because when things arrive upside down and not how you expected, this offers an opportunity to reflect and question. These are blessed qualities that you naturally possess. Always keep questioning, because more often than not, it leads to remarkable discoveries.

For all the New Story creators and those with the courage to be silently drawn to what they truly love. Trust Rumi. He's right, you will not be led astray.

Acknowledgements

This thesis has been a journey around the world and back home again, borne out of belief, love and support from family, colleagues and a loving community that has been all-embracing and understanding. My heartfelt thanks go to my supervisors Karen Tucker and Rich Pancost who knew how to be attentive to this project through all its changes, who knew when to support, when to stand back, how to encourage and guide in the most appropriate of ways. To Michael Crossley with whom the Sharp End concept developed and for opening doors to fieldwork and all that emerged therefrom. To the Bristol Alumni Foundation for the financial support that made this journey and inquiry possible. *Vim promovet insitam*. Thank you for the opportunity!

To my grandmother Helen Bensink for the gift of writing that you birthed into our family, which I am proud to carry on. To Jason for support through many forms of love, and our children Anoush Lee and Oliver Alton for an incessant sense of curiosity which is a reminder of the importance and power of inquiry. To all the family and community who provided nurturing with the deepest care and love while this project matured, especially my parents Terri and Brian, my mother in law Connie and dearest sisters Kimberly, Lizzi and Astrid. To Maroussia, my very dear friend and accountability partner for holding me up in the throes of uncertainty and transmutation. To John for beautiful silences that said so much and for teaching me about metanoia. To Akka for showing me the power of detachment along the path that is God's and for sharing the magic and splendour of the Kingfisher. To Tulia, my sister wolf and writing comrade and your Writers' Block for all that it has borne! To Dave for appropriately challenging questions about the mangrove and brotherly guidance. To the many beautiful souls at 1 Priory Road for the reflections, laughs, shared exploration and writing retreats, especially Jack, Kate, Lydia and Adri.

My deepest gratitude goes to the participants of this inquiry for sharing stories, time, insights and energy. For a human being, a mangrove can be a largely impenetrable living force - thick with tendrils, intertwined and often challenging to visit with depth. Too often, human interaction in the mangrove is of the destructive nature. It gets slashed and removed in the name of development of a landscape for economic gain. And so, it is no wonder that the metaphorical mangrove – those that hold the local perspective – are respectfully protective of its wisdom and lived experiences. Too often, the result of sharing has led to harm. It is for this reason that I am immensely grateful to the many participants in this inquiry who are the mangrove voice of this thesis. Being welcomed to navigate amongst your varied perspectives has been a tremendous honour, and I submit this work with great humility and gratitude for the trust you have bestowed upon me and the research. May it result in a more respectful understanding of how you not only cope with but thrive in the face of environmental change.

Author's Declaration

I declare that the work in this dissertation was carried out in accordance with the requirements of the University's *Regulations and Code of Practice for Research Degree Programmes* and that it has not been submitted for any other academic award. Except where indicated by specific reference in the text, the work is the candidate's own work. Work done in collaboration with, or with the assistance of, others, is indicated as such. Any views expressed in the dissertation are those of the author.

SIGNED: Terra L Sprague

DATE: 6 May 2019

Contents

List of Abbreviations

COP	Conference of Parties
DIOT	Dominant Image of Thought
EIA	Environmental Impact Assessment
ESD	Education for Sustainable Development
IDC	International Development Community
IPCC	Intergovernmental Panel on Climate Change
LMMA	Locally Managed Marine Area
NFA	No Fishing Area
NI	Narrative Inquiry
NOAA	National Oceanic and Atmospheric Administration (United States)
SIDS	Small Island Developing States
UN DESA	United Nations Department for Economic and Social Affairs
UNDP	United Nations Development Programme

1. Towards a New Story of humanity's relationship with the Earth

In this introduction to the thesis, I describe an Old Story of humanity's relationship with the Earth, characterised by domination, disposability and inattention to equilibrium, and expressed as a Dominant Image of Thought which is giving way. I thereby posit the need for a New Story of this relationship that can help us in the age of the Anthropocene. I describe the process of developing the New Story as one that arises from an ambiguous middle space, a kind of uncertainty which can be frightening and can furthermore lead us to grasp for particular kinds of concepts such as resilience.

I ask how this New Story might be contributed to and suggest that this will need to take many forms and must be a collective effort with Narrative Inquiry as one hopeful approach. I introduce the three primary questions of this inquiry before recounting my own motivations for undertaking this research, then describe some of the other intellectual projects of rewriting the story which have resonated and provided inspiration to my own research. These three are projects of decolonising, co-producing and narrating. Finally, I provide a map of the thesis, including my own approach to Narrative Inquiry and descriptions of the different forms of writing my inquiry employs.

An Old Story gives way

The stories we are told, and the way they are conveyed to us, have the potential to shape the way we understand the world.

New Zealand-based author Gregory Kan, in his autoethnographic inquiry *This Paper Boat* (2016) recalls the influence of story upon his own orientation to life. Herein, he recalls: "My mother used to make up stories in the darkness that no one knew the endings to. It was a kind of permission to have imperfect and beautiful plans," (Kan, 2016, p. 13).

The stories which surround us have the power to orient our approach to the world, perhaps with a sense of mystery, maybe of acceptance, or possibly they fuel a need for definitive knowing. In the case of Gregory Kan, these stories were permission to approach the world with allowance for imperfection and uncertainty, and in turn, this informed the way he writes his own story, his own narrative inquiry.

When I first started reading different forms of story from the islands of the Pacific and Caribbean, I found many of them somehow unsettling. They were certainly no less stories than those I had grown up with but, in a way that I still struggle to articulate, there were conventions that did not fit my own understanding of story. French philosopher Deleuze conceptualises an 'image of thought' as that which "guides the creation of concepts," and serves as a "system of coordinates, dynamics, orientations," (Deleuze, 1995, p. 148). In operating from a certain image of thought about what a 'story' was, I found that some of the written myths and legends of Fiji, for example, sometimes ended abruptly without tidy conclusions or full explanations that I was seeking. These did not map on to my image of thought about what constituted a story, as informed by a childhood filled with Grimm's fairy tales and Aesop's fables punctuated by 'once upon a time' and 'happily ever after'.

Meanwhile, around the globe, we are witnessing the demise of a story about humanity's relationship with the Earth which no longer serves us. Thomas Berry, cultural historian and 'Earth Scholar' explains this Old Story as an "account of how the world came to be and how we fit into it," (2003, p. 77). In Berry's understanding, this collective Old Story is a combination of humanity's traditional "mythic accounts" of creation, blended with the modern scientific community's "epic of evolution" (1999, p. 31), resulting in a story of how humanity was brought into existence. This Old Story, he argues, sustained humanity for a long time because it "shaped our emotional attitudes, provided us with life purpose, energized action. It consecrated suffering, integrated knowledge, guided education" (2003, p. 77). However, it has supported many in coming to view the Earth, "more as the background for economic purposes or as the object of scientific research rather than as a world of wonder, magnificence, and mystery…" (Berry, 1999, p. 22). French philosopher, Guy Debord similarly warned:

"A society that has not yet achieved homogeneity, and that is not yet self-determined, but instead ever more determined by a part of itself positioned above itself, external to itself, has set in train a process of domination of Nature that has not yet established domination over itself." (Debord, 2008, p. 81)

For centuries, we have been "experiencing the planet as being a collection of objects of scientific analysis and commercial use," (Berry, 1999, p. 24). This Old Story of humanity's relationship with the Earth has been characterised by domination, disposability and inattention to equilibrium, resulting in persistent extraction of natural resources, intensified agricultural practices, pollution of our airs, waterways and seas in ways that have brought the Earth to brink of numerous tipping points (Engström and Gars, 2016; Renaud et al., 2013; Selkoe et al., 2015; Stockholm Resilience Centre, 2016; Vela-Almeida et al., 2015). One only need look as far as 17 global Sustainable Development Goals (UNDESA, 2014a) to see how much of our human/Earth relationship is in desperate need of attention.

This Old Story can be likened to a Dominant Image of Thought (DIOT). Following Marks's reading of Deleuze, the *dominant* image of thought is that, "which has been formed throughout history," and is one which "stops people from thinking," (Marks, 1998, p. 44). If humanity stopped thinking for some time, comfortable with story of human dominance over the Earth, we have now awoken - not unlike Rip Van Winkle in the Catskills Mountains - from a period of slumber and have abruptly found ourselves walking in the age of the Anthropocene, "a new human-dominated geological epoch," (Lewis and Maslin, 2015, p. 171) within the Cenozoic Era.[1] It is perhaps this acknowledgement of the Anthropocene which has made humanity aware that our Old Story is no longer working.

When we reach this kind of cognitive dissonance, whether at a personal level about what a story is, or at global level about how a story is not functioning, there comes a time to acknowledge that something new is necessary. The great Pulitzer Prize winning writer Toni Morrison is attributed to having said, "If there's a book that you want to read, but it hasn't been written yet, then you must write it." I believe that a New Story of humanity's relationship with the Earth is not only necessary, but it is possible. And it is emerging from a global movement, a 'New Story Community' emanating from many places across the globe and calling for reform from within many domains: educational, spiritual, ecological, scientific, economic (Findhorn Foundation, 2016).

[1] The Cenozoic Era, from 65.5 million years ago to today, is seen as three periods:
the Paleogene, Neogene, and Quaternary; and within these, seven epochs:
the Paleocene, Eocene, Oligocene, Miocene, Pliocene, Pleistocene, and most recently the Holocene.
The Anthropocene is considered a new epoch within the Cenozoic Era.

Arising from the middle

Thomas Berry asserts that, "It's all a question of story. We are in trouble just now because we do not have a good story. We are in between stories," (2003, p. 77). We are living in a moment of middleness - at a time where we recognise that the story is old and outdated, but as yet, we have no replacement. I find something awe-inspiring about being in a middle. There is something tantalising about the promise of possibility. Deleuze tells us that we are always in the middle: "What matters on a path, what matters on a line, is always the middle, not the beginning or the end. We are always in the middle of a path, in the middle of something" (Deleuze and Parnet, 2006, p. 21).

Yes, in some ways we are always in the middle. This middleness is a characteristic of the rhizome, which will be explained later as one of the philosophical metaphors from which this thesis grows.

However, living in such middle uncertainty can also be frightening. Charles Eisenstein, economics, ecology and climate change author and speaker, argues that, "There are two things you can do in the space between stories: nothing, or something. The danger is to, out of urgency or fear, keep doing what you have been doing in the old story," (Eisenstein, 2018). We see this fear in the current narratives and popular forms in which we discuss environmental change. We talk about certain kinds of environmental events as 'natural disasters,' with storms dubbed names like 'Beast from the East'.[2] Books addressing topics of climate change and resilience carry fear-laden titles such as *Out of the Wreckage: A New Politics for an Age of Crisis*, (Monbiot, 2017) *Resilient Life: The Art of Living Dangerously* (Evans and Reid, 2014) and *Defiant Earth: The Fate of Humans in the Anthropocene* (Hamilton, 2017). I see these fear-based approaches as unhelpfully supporting a narrative about a Mother Earth as an angry force taking her revenge on humanity because she can withstand us no longer. While these texts have important messages to bear, and perhaps help to spur us to action by treating climate change as a burning platform, they nevertheless feed off - and perhaps further encourage - a terrorised humanity that is struggling to cope without a functioning story.

Eisenstein further argues that in this middleness, without a New Story and acting from fear, humans have a tendency to grab for forms of familiarity and certainty: "To alleviate discomfort, the temptation is to jump quickly to a solution, to quickly leave the space of unknowing, into a false knowledge which is actually a resurging of old patterns of thought" (2017). He continues: "So, the comfortable response is to find a linear cause that is quantifiable, and essentially to go to war against that cause – to find a quick way to increase or decrease," (ibid). In other words, one of the places we turn when there is lack of certainty is to measurable concepts.

[2] The popular name given to Anticyclone Hartmut in February 2018 that brought unusually cold weather and snowfall to Great Britain and Ireland.

When it comes to environmental change in island nations, this process of grasping for a measure from within the middle is particularly visible within what I refer to as the International Development Community (IDC). This includes the multilateral organisations such as the Commonwealth of Nations and some United Nations bodies, including the United Nations Development Programme (UNDP) and United Nations Department for Economic and Social Affairs (UN DESA), who have initiated large programmes of work focusing on resilience, including environmental resilience, in what are commonly classified as Small Island Developing States (SIDS). Much of this work in SIDS is focussed on developing profiles of vulnerability and resilience, on identifying ways of measuring resilience and on establishing frameworks towards building greater resilience for SIDS (Briguglio, 2014; Commonwealth Secretariat, 2014; Lewis-Bynoe, 2014; Sprague, 2015; UNDESA, 2014b; UNDP, 2016).

Today, if humanity is functioning from the middle, grasping for a measure and living on what Debord called a "sick planet" (2008), the Earth's illness is a condition which is becoming increasingly visible to us. For example, recent reports of the Intergovernmental Panel on Climate Change (IPCC) offer us the stark reality of the seriousness which faces humanity on planet Earth in terms of sea level rise, biodiversity, land and sea temperature rise and climate-related risks to human health, food security, water supply, and livelihoods, to name just a few of the potential impacts areas of a global warming of 1.5C (IPCC, 2018).

In order for humanity to address the age of the Anthropocene, we need many approaches and movements with which to shape our collective efforts in responding to environmental change. These include work to address climate justice, the recognition and establishment of the Earth's rights, and scientific advancement to combat carbon emissions. Meanwhile, myself and others are striving towards a New Story, because if it is a sick planet on which we live, one of the remedies can be through story itself. To poet and Jungian psychoanalyst, Clarissa Pinkola Estes, author of the widely acclaimed book *Women Who Run with the Wolves* (2008), story is many things to humanity. True, it can be entertainment, yet more deeply, she illustrates, it is archetype and life itself. One of the most powerful potentials of story, however, according to this *cantadora* - keeper of old stories - is the role of story as medicine: "The remedies for repair or reclamation of any lost psychic drive are contained in stories" (2008, p. 14). As medicine, Pinkoka Estes argues, stories become energy, akin to an "electrical power [that] can animate and enlighten" (2008, p. 470). In other words, a New Story can have the power to support and inspire humanity to action, of which much is needed if we are to address environmental change in the Anthropocene.

Moving towards a New Story

How might the creation of a New Story be contributed to? Even as there are many approaches and movements with which to shape the collective responses to environmental change, there are also

many spaces from which this New Story must simultaneously emerge. These include our hearts, our homes, our communities and our professions. One of these spaces is the modes of inquiry within academia. I have found Narrative Inquiry (NI) to be a hopeful approach with which to seek a New Story.

This narrative inquiry operates from the standpoint that the New Story must be characterised by a different relationship with Earth, one that can support us in re-establishing a better balance and which can offer counter narratives to the Old Story concepts of domination, disposability and inattention to equilibrium. I draw upon concepts from Deleuze to orient my inquiry, in particular, taking up the ideas of multiplicity and mapping, and by using biological metaphors and the Pacific island concepts of *Sokota* (voyaging) and *Talanoa* (dialogic inquiry). In order to do this, I turn to those who are arguably experiencing the early onset of global environmental change because they have experiences from which we can all learn, namely those from islands at the "sharp end" of environmental uncertainty (Cabot Institute, 2014; Louisy, 2014; Sprague et al., 2014). This is achieved by having more than 70 in-depth conversations and listening to existing stories and experiences of environmental change and resilience across six site visits to Fiji, St Lucia and Mauritius.

While trying to avoid a DIOT about resilience, conversations in the field used the resilience concept as a mechanism through which to explore islanders' environmental concerns and experiences of environmental change. This thesis therefore rests upon my earlier critiques of resilience work in SIDS (2016, 2015; 2017) but does not take up any particular definition of resilience. Rather, this inquiry takes up resilience generally from a socio-ecological perspective (Berkes et al., 2002; Folke, 2006; Gunderson, 2010; Janssen et al., 2006; Kransy et al., 2010; Pelling, 2011) and acknowledges its rise as a global development concept in SIDS (Sprague, 2015). The inquiry, therefore, uses resilience as a site of exploration through which to have conversations and seek stories, rather than a component of the New Story itself. It is important to acknowledge briefly here that this thesis takes 'resilience' as a named concept which is largely transplanted via processes and practices of global development and the IDC, a tension I explore further in a conversation in chapter 6.

The thesis presents the findings as a series of conversations answering three primary questions: what are the pressing environmental concerns in Fiji, St Lucia and Mauritius; what have been some of the responses to those concerns; and, what are the messages that islanders wish to convey to themselves and others regarding what actions need taking. This is achieved through writing a "layered text" (Covert and Koro-Ljungberg, 2015; Ronai, 1995) in multiple styles, not ones that vastly differ from one another, but subtle styles of approach which are offered throughout the analysis and presentation. The responses to these primary questions offer themselves as potential content of the New Story,

whereas my approach to presenting these responses offers a methodological contribution to its development.

Guiding my inquiry is an acknowledgement that a multiplicity of perspectives, knowledges and approaches to answers are necessary, as inspired by Deleuze's project of creating a new image of thought whereby multiplicity is required (Deleuze and Guattari, 2013) as later addressed in the theoretical chapter. This multiplicity extends to the New Story itself. The intention is not to argue for the creation of a new dominant image of thought since this would be counter to the underlying postcolonial and decolonial inspirations, but rather the term 'New Story' is used as a shorthand for a movement of multiplicity. The trick, therefore, and the task for the New Story movement and community, to which this thesis makes a contribution, is to continue developing and offering a New Story that remains open to ever-evolving metamorphosis that reflects the needs of relationship between humanity and Earth, for it is the very dominance of singularity of thought which contributes to the destructive nature of the Old Story.

The intention of this thesis, therefore, is not so much to say what the New Story might be, although there are glimmerings of what it might include, such as a greater trust in nature, a resistance of fear, citizen led responses to environmental issues and an approach to blending different knowledges for strengthened responses to the Anthropocene.

The larger intention of this thesis is to explore some of the ways in which we can develop that New Story. It is an attempt to listen and share, through Narrative Inquiry and offers some ways of writing the New Story as a contribution to its collective development, including an approach to conversation writing.

Self-introductions from under a living roof

Now that you know a little about what inspires and shapes my research and this thesis, it is important to understand at least a bit of how I got here. In this section, I shall partially describe what brought me to this particular place and path that has included a doctoral inquiry into environmental change in three island nations and the act of writing about the importance of creating a New Story of humanity's relationship with the Earth.

In an oasis of wooden construction, speckled with wildflowers on the rooftop, I find myself within an out-of-the-ordinary workshop space, tucked away in the middle of Bristol, England. Surrounded by the comfort of wooden beams, plants, trees and human strangers, participants in a day-long collaborative inquiry project, are being asked to introduce ourselves by describing the place(s) we are from. Not the place names, but the places/spaces/geographies/topographies that inform our sense of self.

What places are you from? Have you ever asked a stranger this question instead of, 'so, what do you DO?' I've considered previously that many of the people I meet in my day to day life have largely disassociated their sense of self from 'place'. We seldom introduce ourselves in terms of place, and if

we do, it's usually a place name - a town, city or country, rather than the physical geography(ies) or topography(ies) from where we hail.

Within the cultures where I was born and in which I predominantly live, the notion of 'who' one *is* has somehow become chiefly about our work, our achievements, and perhaps our families; in short, our contributions to society. We describe ourselves in terms of our likes, our interests, and our production: of knowledge, of material, of other human beings. Very seldom do we express ourselves as the places where we are from. We may name where we grew up, where we have lived, but we seldom associate who we are with the lands or physical places themselves. For many of us, the topographical features of our childhood lands have played, at best, a backdrop to our senses of identity, a mere set of painted canvas in the background of the stage of what we DO. In many other cultures, however, 'who' one is is inextricably linked with the land and earth itself.

This is beautifully articulated by Robbie Shilliam in the introduction to his book, The Black Pacific (Shilliam, 2015), where he retells an episode when a Black theatre troupe and a RasTafari band from the UK meets with Māori and Pasifika communities in the north island of New Zealand and on arrival participate in a welcoming ceremony. Navigating the complexities of the insider-outsider dynamics of his own researcher positionality, Shilliam eloquently articulates some Māori concepts such as *whenua* and *whakapapa. Whenua* described as 'the manifest earth,' where the land is 'never just a material object, because it connects the manifest world back to the seedbed of creation,' (Shilliam, 2015, p. 25). He goes on to explain that 'this is why the land is an ancestor to human beings' (ibid).

Then, I recall observing a *whakapapa* speech, tears streaming down my face listening to the passionate description of the connection between the woman speaker and her ancestors and the land - an articulation so absent most of our day-to-day lives that was so beautiful and made me ask why more of us do not relate this way.

It also reminds me of the similar self-articulation required when one participates in a *kava* ceremony upon entering a Fijian village for the first time. Bound by a cultural and moral code to ask permission to be present in the village, a visitor must pass through a ritual that includes, among other features, the description of where you are from - who you have descended from - why you have come.

From this workshop space in the middle of Bristol, I describe myself as being from the rolling rural hills of upstate western New York: hills that are sometimes covered in multiple feet of ski-friendly snow, sometimes humid in the summer heat where blackberries are picked by families who forage amidst the dairy cattle out to pasture, hills that in autumn take on miraculous colours of red and orange fit for a postcard, and in spring time the their trees provide watery sap that becomes boiled to the sweet

perfection of maple syrup. I am from the Great Lakes region of the United States, where the four seasons are distinct and I know I've arrived when I drive over the last hill that separates the rest of the rest of the world from home, descending into the quiet valley in a county whose place name echoes the sound of our Native American predecessors.

And, so how did I arrive in the islands of Mauritius, St Lucia and Fiji, having come from land-locked upstate New York? I arrived at this place of inquiring within islands, having travelled along a trajectory of professional collaboration and personal critique of the problematics of IDC ways of working in small (sometimes island) states, and this initiated in the small states of Caucasus.

In some ways, I've been seeking for decades what Charles Eisenstein calls the 'more beautiful world our hearts know is possible'. This search took me first to Armenia, where I was seeking to eschew the individualistic society I had been born into, looking for a more socially-collective way of life. During this time, while living with an Armenian host family for three years and becoming part of the local community, I worked at the request of the Armenian Ministry of Education with English as Foreign Language teachers in remote cities, towns, and villages, accompanying them along the path of using more communicative methods of language teaching. While undertaking this work, I observed the ways in which the international development community was operating in this small, former-Soviet country, rolling out its one-size-fits-all educational reform packages (Silova, 2009) and wondering where there was any space for local agency or attention to context, in short, wondering where there was any space for the story about 'this is where we come from'. Even before studying the concept of uncritical international transfer (Crossley, 2019; Crossley and Watson, 2009, 2003) within global educational policy, I found myself being critical of the way this played out at the hands of uni-and-multi lateral aid agencies. This is what drove me to study comparative and international education policy with a focus on global development processes in small states.

After completing an MEd, with a dissertation looking at teachers' understandings of a newly-implemented, and global-policy influenced national assessment system in the small transitional state of Armenia, (Sprague, 2008), I began working more broadly within the field of comparative education in small states, defined, roughly as those with populations less than 3 million (Bacchus and Brock, 1993). At this time, much work on education policy was being conducted in light of the Millennium Development Goals, transitioning towards the Sustainable Development Goals, and through undertaking more research on the topic of Education for Sustainable Development my own work gradually became focussed on Small Island Developing States. In this phase of my research career, I advocated, with colleagues, that there is much we ought to be learning from SIDS about ESD due to some of their early and innovative advances in this area (Crossley and Sprague, 2014), and indeed

because of their position at the sharp end of environmental change (Louisy, 2014; Sprague et al., 2014). It was from this space that I began noticing a narrative shift about islands who had previously been labelled 'vulnerable' that were beginning to be referred – and indeed referring to themselves as 'resilient'. I became curious about the story of this vulnerability-resilience shift, and so I came to my doctoral research in part from these places of personal and intellectual middleness: between issues of education policies, sustainability practices, and responses to environmental pressures; between large states, small states and island states; from a middle space of unfulfilled critical questions about the IDC for which I hadn't found answers because I hadn't yet dug deep enough.

And, why these particular island countries for this inquiry? I perhaps unfortunately, fell into the common practice within island studies of seeking explanations by comparing regional perspectives of the Pacific, Caribbean and Indian Ocean. This comparative perspective became my operational default because of the traditions from which I had been operating at the time. However, while the mangrove - the site of narrative exploration - emerges in the thesis as a metaphorical yet intact 'place', presented to the reader as a constructed narrative location, considerable thought informed the selection of Fiji, St Lucia and Mauritius as the locations for me to undertake the research.

Having conducted my MEd research in Armenia and researching in the field of comparative and international education in my earlier professional career, I was aware of the dynamics of insider/outsider research (Crossley et al., 2016; Hellawell, 2006). Attentive to the vital task of building trust, I was also aware how difficult it can be to find relevant participants in a relatively short period of time. I furthermore wished to inquire alongside communities and individuals that had a sense of identity informed by place. In other words, I wished to find locations that would understand this language of 'what places are you from' rather than 'what do you do' as a way of understanding self.

Taking all this into consideration, I found it very helpful to do a research site appraisal with guidance from colleagues in the Education in Small States Research Group at the University of Bristol, the members of which are predominantly from island nations themselves. This decision-making process, an inquiry in its own right, took into consideration the network links that would facilitate introductions as well as the regional and national policy landscapes including the pilot projects being conducted by the UNDP and Commonwealth about island resilience. For example, Fiji is generally considered the political regional centre for the Pacific islands region, where the locus of thinking about sustainability and climate research, policy and debate is often undertaken. Furthermore, my initial pilot study with Caribbean colleagues informed my Caribbean choice of St Lucia, based on initial findings of stories of environmental resilience that I wished to pursue further. All three countries were participating in

UNDP and/or Commonwealth resilience projects, and an ability to work with members of the Education in Small States Research Group eased fruitful introductions.

The mangrove is not a place I am from, but it is a place I have visited at length and deeply respect. On this journey, physical and narrative, I became an inquirer, speaking and listening with those who live their lives – months, years and generations – in the sea of islands. I do not try to become part of the mangrove in this thesis. This is not a space I feel capable of claiming. I did, however, find myself explaining in that workshop room underneath the living roof in the centre of Bristol, that part of my intellectual home is the mangrove forest. It remains the metaphorical place from which I make a contribution to the New Story through this inquiry.

Fellow voyagers

Others are of course also engaged in the intellectual project of rewriting the story. Some of those which resonate with and inspire my own inquiry are described here, including those engaged in modes of decolonising, co-producing and narrating. I see those who are engaged with these projects as fellow voyagers alongside which my own inquiry travels. While they do not articulate themselves on the voyage of developing a New Story, I will now describe how they can be understood as helping to advance the New Story project.

Decolonising Projects

The movement to decolonise knowledge is built upon an earlier generation of Postcolonial and Decolonial scholars. These movements address social discourses which spawned from the imperial era and shaped social imaginations in the global north and influenced international relations. These areas of scholarship and activism have been "explicit in their challenge to the insularity of historical narratives and historiographical traditions emanating from Europe" (Bhambra, 2014, p. 117). These include Said (1993, 1979) who have critiqued an old story about the power dynamics of Orientalism, and imperialism, raising concerns over the authorship of the narrative - the European authorship - a geography that is simultaneously physical and intellectual. After Said's ground-breaking efforts, others within the Postcolonial project, such as Bhabha (1994) then begin to give us the tools with which to challenge this narrative by "providing resources for the construction of other narratives" (Bhambra, 2014, p. 139). The Decolonial project, operating largely from Latin American origins and including the work of Quijano (2007) and Mignolo (2011) has further worked to trouble a European story of knowledge written as modernity. In these ways, Postcolonial and decolonial scholars have helped to make a call for a New Story.

Decolonising projects then further this work, offering ways of creating a different story, or stories, by making active attempts do 'undo' an old story and addressing the 'how' of creating a New Story. Some

of these attempts at decolonising by uncovering, unmaking and rendering visible. Gayatri Spivak's (1988) work concerning the subaltern "is less the subjective experience of oppression, or the identity claims of the subject, and more understanding (and uncovering) the mechanisms and structures of domination," (Bhambra, 2014, p. 128). In the realm of global development, Arturo Escobar (1995) argues that articulations such as the 'third world' and 'development' are now being unmade by those upon whom the labels have been applied in the Post WWII era. Similarly, one of Boaventura de Sousa Santos's decolonising projects aims to establish cognitive justice, asserting that "Another Knowledge is Possible" by making more visible the array of Epistemologies from the South (Santos, 2014, 2008) and by demonstrating that nature of the university is in a process of decolonisation (2017).

Pacific Decolonising Projects

Some whom I consider to be fellow voyagers on the path of a New Story include those who advance Pacific-specific projects and others within environmental-specific decolonising projects. For example, Epeli Hau'ofa, through his much-respected influence within the decolonial project across the Oceania region (Wesley-Smith et al., 2010) made a significant contribution to the emergence of a New Story, writing from and critiquing, among others, the fields of anthropology (Hau'ofa, 2008a), and international relations – especially donor relations between the Pacific islands and the countries from which they receive aid (Hau'ofa, 2008b, 1983). One of the strong contributions Hau'ofa offers to the New Story is through an act of re-naming. In *Our Sea of Islands* (2008c) he demonstrates the power that comes from a title, or more precisely he exercises the decolonising power to be obtained by reversing a perspective through the act of reclaiming and re-naming. He pushes back against labels such as 'Small Island Developing States' by exposing the imperial influence of this perspective as one derived from "Continental men, namely Europeans, on entering the Pacific after crossing huge expanses of ocean, [who] introduced the view of 'islands in a far sea'" (2008c, p. 32). Presenting perspectives of how Pacific islanders see themselves, rather than how imperial titles have shaped the global vocabularies, he offers alternative titles: 'ocean peoples' rather than islanders; 'Oceania', rather than Pacific Islands; and perhaps most influential, 'a sea of islands' rather than 'islands in the sea'. Such shifts of vocabulary and titles can now be seen within the global development discourse, including international deliberations on climate change, whereby the title 'large ocean states' is emerging as an alternative to 'small island states'.

Also writing from the Pacific region, Linda Tuhiwai Smith (2012, 2004) questions the ownership of research methodology and the epistemology behind it. She identifies important aspects of the old story about the power of knowledge being held in the hands of research agendas and methodologies from the global north, and more importantly, the epistemologies behind these. "Pacific peoples," she argues, "are also used to being studied, or 'helped', by outsiders who have become the academic authorities of and on the Pacific" (Tuhiwai Smith, 2004, p. 5). This has resulted in an old story of the Pacific, one which

"has been authored by non-indigenous Pacific scholarship in such ways that have marginalised the indigenous knowledge systems of the Pacific and Pacific authority over its own knowledge" (Tuhiwai Smith, 2004, p. 5).

While being sensitive to the problematics associated with the term 'Indigenous' (2012, pp. 6–7), Tuhiwai Smith's project has talked "back to" and "up to" research as "an institution of knowledge that is embedded in a global system of imperialism and power," (2012, p. ix) and positions research as "activist scholarship". Her work not only challenges who gets to research whom, and from what epistemological stance, but also addresses the methodologies of the research. She describes the 'decolonization project in research' as one that "recognises and engages in the tricky business of institutional and policy change, of collaboration with non-indigenous researchers and of developing a strategic approach to building research and making it work for us rather than against us" (Tuhiwai Smith, 2004, p. 6). She sets out an "Indigenous Research Agenda" and 25 associated projects, some of which speak directly to the creation of a New Story, in particular the projects of "storytelling," "celebrating survival" and "envisioning" through which we are called to "rise above present-day situations which are generally depressing, dream a new dream and set a new vision," (Tuhiwai Smith, 2012, p. 153).

An array of Pacific Islander articulations of research frameworks and methodologies with decolonising aims have also emerged, such as Thaman's Tongan *Kakala* research metaphor (Thaman, 1997). In her metaphor, the *kakala* is a flower garland symbolising the three processes of gathering knowledge, developing a product, and gifting it in a mode of respect (Scrase, 2014). Another is the *talanoa* approach of dialogic inquiry (Farrelly and Nabobo-Baba, 2014; Vaioleti, 2006), which will be discussed further in chapter 3. Unaisi Nabobo-Baba, offers another decolonising project wherein she not only expounds upon the epistemology of her native village, but sets out an entire methodology and framework, a "decolonised vanua research method" (Nabobo-Baba, 2006). These fellow voyagers explain specific Indigenous Fijian concepts as applied to research processes that decentre Western knowledge and provide ways for Indigenous and non-indigenous researchers to conduct their work in decolonising ways.

Environmentally- specific Decolonising attempts

Decolonising attempts indeed extend to the realm of environment, including how we view nature and our very relationship with the Earth.

Adams and Mulligan (2003), for example, argue that to decolonise nature is to push back against the largely British articulations and enactments of nature as a resource and utility which infiltrated the British colonised nations as an imperial approach to "conquering wilderness" (2003, p. 3). This approach, they assert, heavily influenced the field of nature conservation that, "essentially grew out of a broader desire to 'tame' the wild'" (2003, p. 5). To decolonise these views, they turn to Indigenous

practices of conservation in Sub-Saharan Africa and Australia, noting that, in this field, "indigenous and non-Western cosmologies have attracted new interest" (ibid, 9). They also bring to light the approaches from deep ecology that promote the preservation of nature "for its own sake" (ibid).

With reference to Australian place names, which Plumwood (2003) argues are deeply rooted in colonial legacy, she argues that we can decolonise our very relationship with nature by redressing place names through acknowledging their previous namings and ownerships. Because "An empty and highly conventionalized naming practice is both a symptom and a partial cause of an empty relationship to the land," (2003, p. 73) such a project of reconstructing place names, she asserts, one moreover that "decolonises the mind and generates meaningful and dialogical names," (2003, p. 74) can help us re-establish connection to the land.

Here again, we find the works of Tuhiwai Smith helpful. One of her 25 projects for an Indigenous Research Agenda links directly with environment through the project of 'connecting' (2012, pp. 125–142). This explicitly "positions individuals in sets of relationships with other people and with the environment" and makes explicit the links which people have to the land, through genealogy.

Returning to Nabobo-Baba's articulation of the Fijian way of learning and knowing, upon which her decolonising research project rests, she highlights an indigenous epistemology which includes "ecological and spiritual bases of knowledges" (2004, p. 17). These, she argues are strengths, which "need not be silenced" but rather, "Pacific research and writing need to highlight such strengths in our philosophies of knowledge which are ecologically sound" (ibid).

Other environmentally-focussed decolonising attempts include Arturo Escobar's work on ecology. Herein, he challenges the way in which ecological discourse has unfolded in the Post WWII era as one which perpetuates our view of the "world as resource" (1995, p. 196), which positions nature without agency, and which strips away our understanding of nature as a "source of life and discourse" (ibid). With particular reference to biodiversity and conservation, he later offers the beginnings of a framework for considering "the appropriation and conservation of biological diversity from the perspective of social movements" (1998, p. 53).

Before going on to discuss the co-producing fellow journeyers, it is worth pausing here to say a word about the interface of narratives and decolonising in relation to a New Story. As noted earlier, the phrase 'New Story' is a shorthand for a process of collective development that I take up as being inherently multiplicitious. In other words, I am in agreement with others who operate from a decolonial stance that a single story is not something that is desirable. The importance of multiplicity will be taken up at length in Chapter 2, but as it relates to decolonial thinking and attempts, I agree

with others who argue that there is a 'danger in a single story,' as articulated particularly well by the young author Chimamanda Ngozi Adichie who warns that a single story can lead to 'critical misunderstanding' (Adichie, 2009).

Co-producing

Projects of co-production are inherently interested in creating a new way of working with multiple actors, providing a mode of inquiry that operates from a similar ethic as those working to write the New Story.

In the 1990s, Economist Elinor Ostrom (1996) posited a theory of coproduction whereby social goods and services are developed between publics and professionals who are not in the same organisation. This concept has itself been taken up by those outside its original domain of economics and urban governance and has been re-applied as an increasingly popular social sciences and interdisciplinary inquiry and research approach. While co-production of knowledge is rapidly being applied to a range of situations (Facer and Enright, 2016, p. 87) as shown below, it functions as an exploration of how knowledge can be developed between different types of 'experts', in many cases academics and what we can might call situated experts, or "citizens as local experts" (Fischer, 2000). These experts are situated in communities and might not otherwise participate in the types of inquires that academics undertake. By working with such situated experts, the source of knowledge can become decentred, thereby blurring what has otherwise been a dichotomy between scientific expert or technological knowledge on one hand and local knowledge on the other (Negev and Teschner, 2013). This type of collaboration and mingling of knowledges necessarily opens up room for a New Story to emerge.

Those who research through methods of co-production are often themselves the first to carefully remind us that co-production is not one discrete approach, but rather a set of practices that draw on a rich array of traditions with established roots. Facer and Enright highlight the range of traditions incorporated within co-produced research between, in their case, universities and communities, which includes but is not limited to:

> *"traditions of participatory, collaborative and community engaged research; people's history; environmental activism; participatory ethnography; traditions of responsible innovation and public engagement; participatory/action research; communities of practice approaches; co-design and user-centred design approaches; civil rights, feminist and disability rights traditions; crowd/commons and open innovation approaches" (Facer and Enright, 2016, p. 3)*

Co-production now has a range of uses within myriad fields where the approach is increasingly employed. Whether in the areas of its origins of public management and with respect to the creation of public goods and services (Bovaird, 2007; Pestoff and Brandsen, 2013), in consumer value

production within marketing where producer and consumer roles become blurred (Cova et al., 2011; Payne et al., 2008), or with patients in the medical field (Batalden et al., 2016); whether with the aims of instilling social justice in high crime urban areas (Cahn, 2004) or of knowledge production research with a range of stakeholders for policy impact (Ersoy, 2017), co-production initiates a dialogue and interaction between peoples who might not otherwise interact or work together, animating them towards a common purpose. Despite the diverse range of fields in which it is employed, Filipe, Renedo and Marston point out some common denominators emerge from co-productive processes, including "new forms of knowledge, values and social relations" (2017, p. 2). By its very nature therefore, co-production is a mode of developing new interactions and dialogues which ultimately lead to the possibility of new stories.

Co-producing to address global environmental change

The interactions and cross-fertilisation that occur through acts of co-production also work to build bridges across disciplines. For example, Jasanoff (2004) argues that co-production, while not yet a strong as constituting a theory but rather functioning more like an idiom, can help to bridge disciplines such as those in science and technology studies including physics and other science studies, with those in the social sciences and humanities such as anthropology, philosophy, politics, law, economics, and sociology. This is furthered through the recognition of the interconnectivity between nature and society.

This propensity to bridging disciplines may help to explain why co-production is now being more frequently adopted as an approach to addressing the challenges of global environmental change. It is increasingly acknowledged that this is necessary to bridge what were previously siloed disciplines in order to meet complex challenges that are at once biogeophysical, influenced by human psychology, and leading to anthropocentric changes which have policy implications (Kinzig, 2001). In order to address global environmental challenges, Gillard and colleagues (2016) argue, for example, that what is needed is a new and greater dialogue between social theory and socio-ecological sciences in order to create the needed societal transformation to meet the demands of the Anthropocene. This dialogue can only serve to support the creation of a New Story by virtue of fostering a different discussion altogether. In this way, those journeying the multi, inter and transdisciplinary research path, though they may not articulate their work as such, are also contributing to a New Story.

Coming back to co-production's role within this, Mauser and colleagues (2013) articulate co-production as a need for transdisciplinarity and propose a paradigm for research towards global sustainability in order to meet global environmental changes. They argue that co-production is one of three necessary stages in this process whereby it helps to foster a process of integration which

"upholds scientific integrity in reflexive learning processes that bring together different actors and knowledge practices" (ibid).

This recognition, that addressing the needs of global environmental change requires discussion and research across and between otherwise discrete disciplines, is a powerful opportunity to write a New Story about our human interaction with the Earth in response to global environmental change, in which co-produced knowledge plays an important role.

Those promoting the co-production of knowledge to address global environmental change are now becoming abundant. By way of example, De Souza and colleagues (2015) have addressed climate vulnerability and adaptation using collaborative research approaches within climate "hot spots" of "semiarid regions and deltas of Africa and Asia, and glacier- and snowpack-dependent river basins of South Asia," (2015, p. 747). Their use of co-production was used to "identify the state of knowledge about the biophysical impacts, social vulnerability and adaptation of policy and practice" (ibid). Similarly, in South Africa a co-production approach has been used to "generate shared knowledge and action for ecosystem services" to reduce risks associated with environmental change such as wildfire, flood, droughts and storm waves with the aim of shifting decision-making, policy and practice (Reyers et al., 2015, p. 7362).

Co-producing with local, indigenous and traditional knowledges

There is a growing awareness that humanity's work of addressing global environmental change must now turn more readily to the forms of knowledge which have in previously been kept outside the scientific arena that dominates environmental research, particularly those knowledges which are considered local, Indigenous or Traditional (Berkes et al., 2000; Huntington, 2000; Zimmerman, 2005). There is an increasing amount of co-produced research on topics of environmental change which explicitly incorporate these forms of knowledge.

Much of this is co-produced environmental research with Indigenous or Traditional knowledge is rooted in Artic experience. For example, in Nordic countries, Indigenous views on climate change have been sought in an education-oriented project which documents Indigenous climate change observations (Mustonen, 2002). In other instances, researchers and community members in the Canadian artic have co-produced environmental observation inquiries to track long-term environmental change for the establishment of databases (Kofinas, 2002) and have used film making to raise awareness of environmental change (Jolly et al., 2002). Co-production integrating Canadian Artic knowledge has also been utilised as "an institutional trigger or mechanism to enable learning and adapting to rapid environmental changes" (Armitage et al., 2011).

The Pacific Ocean offers another space where co-production meets Traditional and Indigenous knowledge to address the issues of environmental change. For example, Hawaiian storyteller and coastal community resilience trainer Kalani Souza and other Indigenous Knowledge practitioners in the Pacific region have co-produced climate change models with the United States National Oceanic and Atmospheric Administration (NOAA) by integrating 825 years of weather chants into El Nino climate modelling processes (Souza, 2012), an act of co-production which greatly enhanced a data set that had previously been based on only 34 years of weather records. Also in Hawai'i, co-production between the United States Bureau of Ocean Energy Management and Indigenous Knowledge practitioners and community members has been undertaken in order to create guidelines based on a Native Hawaiian worldview and understanding of biocultural resources and landscape which are to be used towards the development of renewable energy sources in Hawai'i (Van Tilburg et al., 2017). In the Southern Pacific, Indigenous Māori knowledge in New Zealand has been incorporated into research on climate change and bird conservation over a 14 year project, to include the co-production of not only research data but also where research hypothesis themselves were co-produced (Berkes, 2009; Moller et al., 2009).

Narrating

Amongst those who I see as voyaging towards a New Story are those engaged in a third project of narrative approaches. A research approach that has been with us for around 40 years (Speedy, 2008a), Narrative Inquiry (NI) is challenging to define because its breadth of scope and application does not lend itself easily to categorisation. In the broadest sense, the approach uses different forms of narrative and story to inquire or research phenomena.

Within Narrative Inquiry, the narrative form can be involved in multiple aspects of the research process. The narrative may itself be the site of an inquiry, or equally it may be the very method of undertaking an inquiry. Narrative can likewise serve as a type of analysis (Riessman, 1993) as well as a form of conveying understanding and sharing findings. Some forms of Narrative Inquiry focus on everyday storytelling (Ochs and Capps, 2009) while others focus on the use of narrative within performance (Langellier and Peterson, 2004).

I find it helpful to think about two camps of Narrative Inquiry. First are those which employ narratives as a form to be analysed. These include studies of life story (Webster and Mertova, 2007), either the life stories of others or of oneself through forms of auto-ethnography (Holman-Jones, 2005; Sparkes, 2001). The second camp develops or constructs narratives themselves as an act of inquiry. Sometimes, this means producing in the form of a particular writing genre, such as the crime novel (Reece, 2015), a choose your own adventure storybook (Mendus, 2017) or by writing dialogue with a fictional

character who serves as a co-researcher (Speedy, 2008a) or in acts of collaborative writing (Speedy et al., 2010).

As an overall approach, I understand Narrative Inquiry as contributing to the New Story by using the very concept of story and narrative as a means to undertake research and through which to inquire, thereby pushing the boundaries of what is considered 'research'. Narrative Inquiry is more often used in social sciences fields such as education (Bainton, 2007; Clough, 2002; Lyons and LaBoskey, 2002; Trahar and Yu, 2015) though is considered to be better-established in other domains such as anthropology and ethnography (Speedy, 2008a) yet is emerging in the areas of psychotherapy (Bond, 2002; Speedy, 2007, 2008a) and medical research as well (Martin, 2011).

Narrating to address environmental themes

The use of Narrative Inquiry within environmental, ecological or climate-change related studies is still emergent: research, for example in the field of climate change and energy, tends to be, "dominated by particular methods and approaches to defining and addressing problems, accomplished by gathering and analysing the corresponding forms of evidence" (Moezzi et al., 2017, p. 1). Such approaches do not typically view story or narrative as evidence. However, narrative approaches are increasingly being argued for within areas such as climate change adaptation research (Paschen and Ison, 2014), energy and climate change research (Moezzi et al., 2017) and environmental research which draws upon traditional ecological knowledge (Lejano et al., 2013). Integrating the use of narratives and Narrative Inquiry into these and similar environmentally related fields is deemed helpful because it supports a focus on socio-cultural dimensions (Paschen and Ison, 2014), for example the intersections between nature, technology and humanity (Moezzi et al., 2017), while also providing avenues towards social engagement with environmental research (ibid).

Other realms in which narrative environmental research does exist include inquiries into the concepts of landscape, and oral history. Some of these use narrative approaches alongside ethnographic practices of research. The concept of landscape can be a lens through which to look at humanity's relationship with the Earth as place. These include Basso's (1996) *Wisdom Sits in Places*, an ethnographic inquiry of landscape and language among the Western Apache in the United States that investigates the significance of the stories behind place names. Similarly, Mulligan (2003) investigates landscapes as being 'storied' spaces in order to understand the ways in which relationships between people and a 'country' are understood by Aboriginal people. Other researchers, such as Lagi in Fiji (Yost, 2016) and Van Toorn in Australia (2006) demonstrate how oral histories provide narratives through songs, stories and other forms of oral narrative that often demonstrate relationship with the Earth. Such works often serve to highlight the importance of recording and sharing, in appropriate and culturally sensitive ways, these forms of knowledge which otherwise might be only verbal.

Some of those voyaging towards the creation of new stories conduct their inquiries in ways that combine all three approaches discussed above. That is, they operate as a decolonising project with narrative and using co-production methodologies, in tandem. Such is the work of Line Sunseri, an Oneida First Nations Indigenous scholar who operates from an explicitly decolonising position while featuring an array of narratives and researching in a co-productive manner in order to decolonise the field of research for Indigenous women (Sunseri, 2007). Challenging certain conceptualisations of what counts as research, she argues for the incorporation of a 'broad spectrum' of narrative accounts, including oral histories, narrative interviews, traditional creation stories, accounts of dreams and ceremonies. Despite the fact that they "do not necessarily conform with Western academic standards," Sunseri argues the importance of these forms of narrative because they are "in agreement with what is often recognised as Indigenous ways of transmitting knowledge," (2007, p. 99).

Such uses of story, storytelling and narrative in these kinds of inquiries highlights how narrative can help us look for, or make more evident, the ways in which humanity does have positive forms of relationship with the Earth. In this way, some narrative inquiries exist, which help to highlight aspects of the relationship with that go against the Dominant Image of Thought, aspects which we in turn might want to consider for inclusion the New Story.

A map of this thesis

Here, I explain my approach to Narrative Inquiry and then the types of writing within this thesis as three distinct styles. Thereafter, I provide a brief description of each piece of the remainder of the thesis.

My approach to Narrative Inquiry

My own approach to Narrative Inquiry within this thesis is principally from the second camp outlined above. While I indeed sought life stories of responses to environmental change, and like Sunseri, I incorporate folk tales and other types of narratives, it is in the very writing of a narrative - in the form of conversations - that principally makes my study one of a Narrative Inquiry. In this way, see my contribution to the New Story is largely a methodological one.

I took up this approach of Narrative Inquiry, not at the beginning of my research journey, but as a response to an acknowledgement that my originally planned study was one that would likely replicate an Old Story by perpetuating the naming of resilience, a mechanism I wanted to critique as one of measurement and a fear-based response from the place between stories. These were themes that troubled me at the time - how to create a New Story that doesn't just reproduce domination through the act of naming and develop top-down measurable constructs like the kind that I saw resilience becoming.

I was searching for an opportunity to press against the Dominant Image of Thought of resilience. I was looking for a different way to capture these things. After completing the first round of fieldwork, I found it impossible to reduce more than 70 conversations into a categorised typology of island resilience as I had originally intended. So, eventually, I shifted away from that initial project which had sought to better comprehend the multiplicity of understandings about socio-ecological resilience to environmental change within the island nations of Fiji, St Lucia and Mauritius. Instead, as will be explained in a further chapter, I turned to Narrative Inquiry as a way to write conversations between the participants in the study who, while not having met one another, had shared their own stories and perspectives. These written conversations provide insights into what may constitute some of the content of the New Story, but more importantly, it is in this act of writing, this narrative approach of conversation development, that is my methodological contribution to the New Story, a story which must ultimately be written as a collaborative endeavour across the globe.

Writing styles

As a Narrative Inquiry, this thesis can be understood as a "layered text" (Covert and Koro-Ljungberg, 2015; Speedy, 2008a) which communicates through three distinct types of writing. First is a more traditional academic style, which is used within this and the following two chapters that describe the theories and methodologies which informed and shaped this inquiry and written thesis. Following these chapters are a series of 'Sokota Stories' and 'Mangrove Conversations' that make up the remainder of the thesis, providing the context of the inquiry, the findings and associated commentary.

The Sokota Stories

Sokota is a concept I was introduced to in Fiji. It is the *iTaukei,* Indigenous Fijian, concept of voyaging with the intention of learning and giving back. This will be further explained later in the thesis as to how it shaped my research approach. However, as pertains to a form of writing in the thesis, the interspersed *Sokota* stories are fictionalised and metaphorical accounts that convey what motivated me to undertake this study (A Tree of Resilience), the multiplicity orientation which guided my inquiry (Arrival of The Spirit of Haida Gwaii), and an expression of my combined learned knowledge (Back to the Middle), which I hand back to those with whom I journeyed as an expression of my gratitude, and as a sharing of my learnings. The *Sokota* stories are interspersed throughout the thesis to both provide both a backdrop to the mangrove conversations and to serve as a place of reflection and discussion of the learning that has taken place throughout the journey.

In another form of story, I converse with Dogfish Woman, a mythological creature from the Haida First Nations peoples from islands of Haida Gwaii in the Pacific Northwest Coast of the American continent. She serves as a critical friend to help draw out key implications and conclusions and will be further introduced in the first Sokota story.

The Mangrove Conversations

The mangrove serves as a key metaphorical expression of local knowledge, that is, the situated knowledge that is locally embedded in the islands of this inquiry. This concept of mangrove as local knowledge is expounded upon in in greater detail in 'Theoretical and Metaphorical Constructs'. There are seven Mangrove Conversations throughout the thesis. In these, I position myself in conversation with mangrove forests. When the mangrove speaks, these are the local voices of those who participated in this study – the teachers, politicians, taxi drivers, artists, researchers, village chiefs, students, parents, NGO workers, volunteers, business owners, and writers in Fiji, St Lucia and Mauritius who shared their experiences of facing environmental change and who articulated what their responses to these changes have looked like in their individual lives, communities and countries. The mangrove conversations fall into two categories. Two of them are group conversations with participants from all three countries of the inquiry. The remaining five discussions take a one-on-one approach where I have a discussion with a mangrove from one country. Each of these seven conversations either weaves within it some critical commentary, or in some cases, this commentary comes explicitly after the conversation in a non-narrative style. In both approaches, this commentary serves to unpack the findings and understandings from each of the scenarios.

Thesis component parts

What follows is a narrative map describing each of the upcoming components in the order in which they appear throughout the balance of the thesis. This provides an orientation of the forthcoming pages and the different styles of writing.

Sokota: A Tree of Resilience - This short *Sokota* story provides some critical questions about how the concept of resilience has been approached in global deliberations and distributed to countries around the world. Such critical questions were the initial motivation for undertaking my fieldwork.

2: Theoretical and metaphorical constructs: Towards an assemblage – Here, I explain the main theoretical and philosophical tenets underpinning the thesis: multiplicity, rhizome, trees, and mangrove by drawing from and building upon readings of Deleuze, Guattari, Calhoun, and Tully. I open with the Deleuzian concept of multiplicity. Then, in harmony with the environmental change theme of the thesis, several theoretical concepts take the form of ecological metaphors. These include rhizomes and trees, following Deleuze and Guattari. Then, I introduce concepts which I have crafted as outgrowths of these existing philosophical theories. The concept of mangroves as an articulation of local perspective and local knowledge.

Sokota: The arrival of *The Spirit of Haida Gwaii* – This second *Sokota* story reinforces the importance of a multiplicity of perspectives. Arriving on this boat comes an important character, the Dogfish

woman, who will serve as a critical friend later in the thesis, helping to draw out implications and conclusions.

3. Researching through Conversation and Story: Coming to learn Narrative Inquiry – Here, I provide a methodological exploration to the overall inquiry. I describe the strange pull which silently drew me away from an initial research approach about categorising resilience, and instead towards Narrative Inquiry by explaining some of my personal stories of identification with story and the power of narrative. I briefly discuss researcher positionality and ethical decisions. I introduce some of the other writings that inspired my own approach to this Narrative Inquiry and briefly explain how Deleuze and Guattari's tracing-mapping concepts influenced my work. Sections about where and how the stories were pursued describe aspects of fieldwork. Some of the particularities of researching in small island contexts that informed my work in Fiji, St Lucia and Mauritius are also explored. I discuss the role that *talanoa* played in the inquiry and how I found a path to narrative analysis through conversation writing. I end with an explanation of the mangrove voice as a narrative tool, providing a precursor to the first Mangrove Conversation.

4. Pressing Environmental Concerns in Fiji, St Lucia and Mauritius – This is the first of two group mangrove conversations wherein the mangroves from all three countries and I enter into dialogue. This narrative analysis explores the findings of the project's first primary question about the pressing environmental concerns in St Lucia, Mauritius and Fiji. Quotes from all mangrove conversations come directly from participants from **Fiji**, **Mauritius** and **St Lucia**. Through this mangrove conversation, some contextual understanding of the three countries is also provided.

5. Mangrove Conversations with St Lucia and Fiji – In a series of one to one mangrove conversations, I take turns speaking to each country mangrove about the varying responses to environmental change they have observed and experienced in their islands, thereby answering the second primary question.

First is a conversation with St Lucia that takes a form close to storytelling. The mangrove trees articulate the knowledge and experience which was conveyed across numerous interviews and focus groups in which an issue of seaweed was discussed as a pressing environmental concern for St Lucia. This problem of the 'messy, incessant seaweed' unravels to articulate the importance of letting nature take its course.

Second is a conversation with Fiji about the role of renewal and laughter and how we don't need to always see disaster as disaster. Stylistically, this conversation is rather different from the St Lucia seaweed episode because it draws upon multiple narrative elements as opposed the first-hand account developed from interviews which comprise the St Lucia seaweed story. With the Fiji

mangroves, I employ different forms of 'telling' in order to demonstrate the range of historical and modern perspectives that were more evident in the Fiji context during my fieldwork. This conversation with the Fiji mangrove is followed by some reflection and commentary.

6. Mangrove Conversations with Fiji and Mauritius – In this section, I carry on with three more one-to-one conversations. Stylistically, these conversations are more dialogic where I play a more active role in the discussion, thereby weaving in more reflection and commentary.

With the Fiji mangrove, the conversation focuses upon the responses and behaviours evident in the aftermath of extreme weather events including tropical storms and flooding. The mangrove trees share stories of recovery, but also inhibition amongst the people in the wake of a flood or cyclone. Some barriers to recovery and resilience are explored.

Then the Mauritius mangroves discuss some of the citizen-led approaches to environmental concerns. Here, my interaction with the Mauritius mangrove is dialogic and my analytical commentary is integrated into the discussion. This includes reflections on multiplicity and how the Mauritius experience feeds into the development of a New Story.

At this point, I pause for a brief interlude with the Dogfish woman to discuss the notion of resilience as a travelling concept before returning to the Fiji mangrove for the last of the one-to-one conversations. The focus here is about different kinds of 'knowings' and how those can be brought together to contribute to a New Story. These are substantiated by stories of knowledge blending in the domains of building and fishing/no-take practices.

7. Mangrove Messages - This is the second group mangrove conversation with **Fiji**, **Mauritius** and **St Lucia** all together and serves as the final conversation with the mangroves. Here, they articulate the messages they wish to share with their own citizens and governments. We also hear the messages that they wish to express to other nation states and to people outside their islands. In doing this, the third primary question is addressed.

8: Going Deeper with Dogfish Woman - This discussion with the Dogfish Woman serves to reflect on the mangrove conversations as a whole, but in particular the last group conversation about the messages that the mangroves want to explicitly share. Following this, she encourages a 'going deeper' into the issues that underlie the those articulated by the Mangroves. Through this, I explore that something yet more fundamental must be taken up if the issues of global environmental change are to be addressed. The conversation also provides an overview of some elements of the New Story that have been uncovered through the mangrove conversations and offers some reflections on the hopes of the study.

Sokota: Back to the Middle: This *Sokota* includes both a story and a final brief reflection to conclude the thesis. Together, they bring the inquiry to a close by returning to the spot of the first *Sokota*, in a fictional summary about some of the potential content and the process of bringing forth the New Story.

Sokota: A Tree of Resilience

The grounds of the meeting place are perfectly prepared, ready to welcome hundreds who are coming from all corners of the globe to this island. They arrive to share, to listen, to advocate, to establish a pathway for 'resilient small island developing states' through making partnerships with one another.

In the centre of the meeting grounds, all immediately see a singular planted tree, pruned to perfection, bearing large, pristine leaves and ripened seeds. These leaves bear instructions, resolutions. The leaves are a communication, each carrying a tracing of the Resilience Plan. Every individual at the meeting is given a leaf from this canopy to take back to their home. They are to plant these offshoots in their homelands to produce resilience trees in many faraway countries.

The seeds of the Tree of Resilience are also distributed to others, sent to those who have not come to the meeting grounds. They are available, to any who ask. The recipients open their packets of seeds and exclaim, 'Oh, what a useful contribution which will look lovely in our garden'. And they think, 'what a wonderful thing that this group of people have collectively produced this tree with leaves bearing the Resilience Plan and have shared the seeds.'

But the Tree of Resilience still stands in this meeting place, and it knows that it was planted with care and guarded carefully by a select few before the others even arrived. It was planted and it germinated and grew well in advance, before the others gathered.

From where did this tree come? How long has it been here already? Who is its gardener?

It is now getting too windy to ask any more questions. A storm is quickly approaching.

2. Theoretical and metaphorical constructs: Towards an assemblage

Underlying this thesis are a number of theoretical concepts taken from, and building on, readings of French philosophers Deleuze and Guattari, sociologist Craig Calhoun, and scholar of indigenous philosophy and governance James Tully. In this chapter, I therefore describe the main theoretical and philosophical orientations at work in the thesis as being parts of an assemblage consisting of multiplicity, rhizome, trees and the mangrove.

I open with an exploration of multiplicity being a counter narrative to the Dominant Image of Thought. Then, in harmony with the environmental resilience focus of the thesis, I explain the theoretical concepts take the form of ecological metaphors. These include rhizomes and trees, after Deleuze and Guattari. I then introduce metaphorical concepts which I have crafted as outgrowths of these existing philosophical theories. This includes a reconsideration, or second reading of trees, followed by the concept of mangroves as an articulation of local perspective and knowledge.

Theoretical Assemblage

The concepts explored in this chapter - multiplicity, rhizomes, trees (in two orientations) and the mangrove - come together to make a theoretical framework of sorts. Yet, 'framework' seems too confining, centred and too tidy, and too much like that restrictive shadowbox.

I have chosen instead to use yet another concept from Deleuze and Guattari to capture the essence of the theoretical concepts and metaphors; that of Assemblage.

> *"…it is significant that Deleuze and Guattari do not provide a simple definition of what an assemblage is; rather their concern is with examining functioning, with how assemblages work." (Skeet, 2014, p. 65)*

Assemblages have no hard edges; they have a territory, but without concluding borders. They can be likened to cogs, are concerned with process and making things function. Here, I describe each aspect of the assemblage in turn and explore how they fit together to provide a compass for the journey of this thesis.

Multiplicity: A counter narrative to a Dominant Image of Thought

> *"I would now like to introduce a symbol of the spirit of a post-imperial age of cultural diversity. It is the wonderful sculpture by Bill Reid, the renowned artist of Haida and Scottish ancestry from the Haida nation of Haida Gwaii (the Queen Charlotte Islands) off the northwest coast of Great Turtle Island (North America). The sculpture is a black bronze canoe, over nineteen feet in length, eleven feet wide, and twelve feet high, containing thirteen passengers, sghanna (spirits or myth creatures) from Haida mythology." (Tully, 1995, p. 17)*

Multiplicity as different angles and perspectives, reminding us to look at things differently. To walk around. Not an aimless meandering, but to circle a situation, a concept, in order to observe and understand from varying angles.

The Spirit of Haida Gwaii, source: (Hisgett, 2012) Creative Commons License

> *"The spirit of Haida Gwaii evokes a boundless sense of wonder. It is the mystical. I want to walk in silence around its overflowing spirits, letting their endless perspectives and interrelations awaken the play of my imagination from its dogmatic slumber. I know its meaning is unfathomable and my words are unworthy. Mine is a crude voice over a multiplicity of cultural voices, who, if one could only learn to look and listen, speak for themselves." (Tully, 1995, p. 22)*

Heeding Tully's timidity and humility, this is how I take up the essence of the sculpture, *The Spirit of Haida Gwaii*. A reminder to consider varying viewpoints. Here we find a seemingly unlikely mix of passengers: bears, beaver, dogfish woman, mouse woman, playful wolf, eagle, frog, conscript, raven and chief. How do they experience this journey they are on, and what does it mean to them to journey at all?

The Spirit of Haida Gwaii, source: (Robertson, 2007) Creative Commons License

And it is not possible to see, nor indeed to hear all these characters simultaneously. The sculpture requires that we navigate around it to appreciate all those in the boat. In this way, there are different angles providing vastly different perspectives. This offers an alternative to the Dominant Image of Thought; it offers space for a reconsideration.

In this inquiry I am drawn to the messiness of multiplicity. Initially, I was drawn to the tangled variety of understandings about what resilience means and what it looks like in the face of environmental change in island nations. I was not seeking a clear-cut, neat-around-the-edges understanding.

But why not? Because messy multiplicity exists. Different ways of understanding, seeing and experiencing resilience and environmental change abound. I am not interested in a tidy, straightforward answer to 'What is resilience?' We already have this in the form of a Dominant Image of Thought.

And this dominant image was noticeable in conversations. Many times, participants, even those who were not part of policy spaces - where 'resilience talk' abounds on islands - expressed an awareness, a sense that there is a dominant image of resilience.

In conversations, I tried to uncover what islanders understand of the word resilience. This is one interaction that was quite typical, where I (T) ask another (R13) what they think 'resilience' means.

T: What about this concept of resilience – is this something that you hear about or are aware of? What does it mean to you?

R13: Resilience is kind of able to be prepared for it? (pause) Is that it?

T: That's part of it – but that's exactly what I'm exploring – the different ways that people understand it. My question is about the differing ways – not what is THE definition.

R13: To me, that's what it is – are we prepared for climate change. Whatever it's going to do to us – planning ahead – are we seeing ahead or is it just going to happen. (another pause) Is that it?

Resilience. As I ask about it. The word itself is sometimes known, sometimes recognised. And yet, even when the term is unacquainted, the concept itself is almost assuredly familiar, and through the sharing of accounts and stories, its manifestation is conveyed.

Yet, I sense concern. A worry that there is a belief in right and a wrong understanding. So, I wondered, why heed the oppressive need to have the right, tidy definitions?

But why do I choose to take this particular multiplicitous route? Why acknowledge the complicated or 'messy' plethora of ways to understand a concept? Why not simply ask, collect, sort, splice, clean up, round off the edges then fit them into a tidy shadowbox on the wall? Why not develop a tidy typology of polished concepts from three countries; perspectives of people from along a continuum of proximity to policy?

Through interactions and discussions with other researchers during my fieldwork travels, through discussing these quandaries in the midst of my fieldwork, I found the strength to resist the tidy typology, the urge to contrast and compare the ways in which perceptions about resilience and environmental change might be the same or different in these three very different island nations. I was challenged by the insight of Pacific researchers to instead embrace the deep multiplicity that had been arising. One comment in particular hit home:

> *'…in the process of comparison across cultures, or across geographical regions, or whatever - across societies - there tends a risk of homogenising different dynamics of each individual one, trying to find the differences or indeed the points of comparison, and, and neglecting of – or the risk of neglecting – the complexity and big contradictions between different cultures and societies. So, I'm just wondering how you're encountering that.' (focus group participant, Fiji)*

This comment from a Pacific researcher became impossible to ignore and spurred me on to embrace the multiplicity of perspectives.

As an inquiry focussed on story and narrative, I found myself drawing understanding from multiple narrative sites. This act of embracing multiplicity as a theoretical concept echoed through other writers and narrative styles that I was encountering along the way, an echoing that affirmed the importance of avoiding tidy labels and articulations. One of these confirmations came from Doris Lessing through her novel, *The Golden Notebook*. In the introduction to her landmark work, she articulates the nature of the main character's dismay as expressed in the novel's final notebook, conveyed in the statement:

> *"How little I have managed to say of the truth, how little I have caught of all that complexity; how can this small neat thing be true when what I experienced was so rough and apparently formless and unshaped." (Lessing, 1972, p. xiii)*

This final notebook in Lessing's text is an attempt to summarise all the complexity of the preceding notebooks into one condensed form. For Lessing, this is her explicit statement against the Dominant Image of Thought relating to the traditional novel - in part because the richness brought to bear from all the preceding notebooks would be diminished should she follow the convention of novel structure. Similar to the above sentiment conveyed to me by a Pacific researcher, Lessing's message expresses the power of resisting the reductionistic. It further articulates the power of speaking through form and creative decisions in the development of textual artefacts.

Not all things can be contained in tidy boxes. I imagined trying to put seaweed into a shadowbox, watching it slide and slip out. Or rhizomes placed inside such a container; how they would continue to grow, proliferating beyond the hard edges. They would find ways between the cracks to the outside. These living multiplicities are not containable. It felt as though attempting to do so, to reduce the various perspectives on environmental change in Fiji, St Lucia and Mauritius would be an untruth, even a violence unto the wealth of perspectives shared.

So, I instead chose to dig deeper, to look for submerged understandings and to continue around, as if circling *The Spirit of Haida Gwaii*, wading through the surrounding seaweed, and considering the perspectives of the different characters.

Instead, I accepted that there is no need to compare these different perspectives. The first stage is to see that they are here, to locate the multiplicities, and then be open to their benefits. As evoked here, multiplicity not only recognises difference, but acknowledges its benefits. It is open to messiness, and even embracing of incommensurability:

"I do not mean simply learning various, supposedly basic, information about those different from ourselves, and I do not mean indulging in an easy relativism that may amount in practice to refusing to take difference seriously. … we should appreciate not only differences of value but the positive value of difference." (Calhoun, 1995, pp. 72–74)

I chose to take seriously this multiplicity of understandings about resilience and environmental change because I see that it exists, and to ignore it would be dismissive of a wealth of knowledge.

I take the path of multiplicity seriously because it's a way to challenge an otherwise overriding understanding - the Dominant Image of Thought surrounding resilience that holds us in an Old Story. Taking a multiplicity approach allows room to challenge a DIOT view of resilience that is otherwise under the pressures of managerialist time and largess, fuelled by the demand to upscale, and driven by a mandate to work only in ways that are measurable.

Taking multiplicity seriously also made sense because it relates the concept of ecological resilience itself. The biological world itself, as Calhoun reminds us, finds a possibility in difference:

"Like the multiplicity of species in the biological world…there is an intrinsic advantage to the production of cultural variation; it is a source of possibility…" (Calhoun, 1995, p. 75)

This possibility, this positive value of difference - particularly in the biological and ecological world - is exhibited within resilience science itself as being a key factor to ecosystem and socio-ecological resilience (Coulding et al., 2002; Davidson-Hunt and Berkes, 2002; Gunderson, 2010). The scientific forms of socio-ecological resilience and the field of biodiversity take difference – difference in the form of multiplicity as diversity - very seriously.

Taking biodiversity as strength within forests as one brief example, and what happens when this diversity is not present:

"Commercial forest monocultures also encourage mass reproduction of butterflies and moths, such as nun moths and pine loopers. What usually happens is that viral illnesses crop up toward the end of the cycle and populations crash. ... If trees are infested and defoliated for two or three years in a row, many of them will weaken and die." (Wohlleben, 2017, pp. 117–118)

And yet multiplicity itself is not one 'thing', not a discrete concept. I have already been using different words interchangeably to communicate nuanced ways of understanding it: multiplicity, difference, diversity. These perhaps fall into a particular way of thinking about multiplicity. There is a multiplicity of multiplicities emerging. There are a number of ways of understanding multiplicity as a theoretical construct because it can play many different roles. It is a boat full of explanations.

One way of understanding multiplicity is through Deleuze and Guattari's interpretation of Bergson's work on multiplicity. The biggest distinction I see here is between numerical and typological.

> *"And in Bergson there is a distinction between numerical or extended multiplicities and qualitative or durational multiplicities." (Deleuze and Guattari, 2013, p. 36)*

Bergson illuminates the difference between the discrete, numerical or 'in degree' on one hand while the continuous, non-numerical and 'in-kind' is on the other. And yet this can become unhelpfully dualistic. So, it becomes necessary to get still messier, to continue resisting the tidy boundaries of the shadowbox.

And in walking around the boat of multiplicity, how can it help to further explain the concept of resilience itself?

> *"Let us return to the story of* multiplicity*, for the creation of this substantive marks a very important moment. It was created precisely in order to escape the abstract opposition between the multiple and the one, to escape dialectics, to succeed in conceiving the multiple in the pure state, to cease treating it as a numerical fragment of a lost Unity or Totality or as the organic element of a Unity or a Totality yet to come, and instead distinguish between different types of multiplicity." (Deleuze and Guattari, 2013, p. 36)*

In another Deleuzian angle, the concept of multiplicity is a *plane of consistency* filled with different lines.

> *"All multiplicities are flat, in the sense that they fill or occupy all of their dimensions: we will therefore speak of a* plane of consistency *of multiplicities, even though the dimensions of this 'plane' increase with the number of connections that are made on it." (Deleuze and Guattari, 2013, p. 8)*

Take 'resilience' or responses to environmental change as one such plane, which I was seeking to fill with different ideas of resilience. A multiplicity of understandings. The lines of the plane, according to Deleuze, all remain intact. While they may intersect, like the lines of a rhizome underground, they do not cancel one another out. They do not dominate one another. They build to create a multiplicitous picture of the concept.

> *"Creating concepts is constructing some area in the plane, adding a new area to existing ones, exploring a new area, filling in what's missing." (Deleuze, 1995, p. 147)*

And so, multiplicity is an orientating concept which is enacted in a range of ways throughout this inquiry and thesis. It is methodological, theoretical, it is of structural significance to the thesis itself, it is rhizomatic and at times, unapologetically messy.

The main function that multiplicity provides within the theoretical assemblage is as a resistance to the Dominant Image of Thought. One way this is done is by taking up the concept of the rhizome, looking at it in relation to trees and finally extending this to the mangrove.

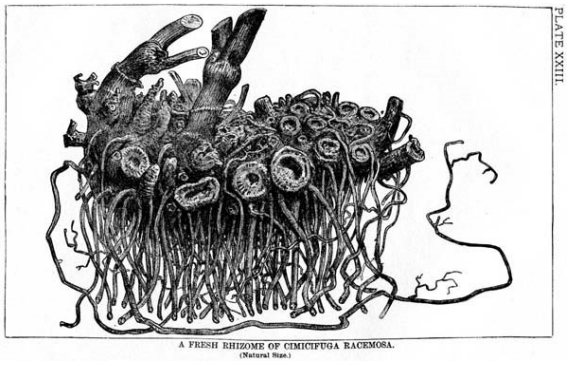
Rhizomes as a Manifestation of Multiplicity

Submerged tendrils reaching out in many directions, sometimes crisscrossing, intersecting, ever widening, extending horizontally.

> *"A rhizome has no beginning or end; it is always in the middle, between things, interbeing, intermezzo…the fabric of the rhizome is the conjunction, "and . . . and . . . and. . ."" (Deleuze and Guattari, 2013, p. 26)*

Putting your ears to the ground, what would you hear a rhizome saying? What would its tendrils vocalise to one another? Perhaps, 'Over here, try this ground, here in this spot. I'm heading off in this direction, meet up with you later.' This is strength through divide-and-conquer, rather than a bind-together-as-one approach.

"A rhizome is a root-like, underground stem, growing horizontally on or just under the surface of the ground, and capable of producing shoots and roots from its nodes." (Ofori, 2016)



Strength is found in this horizontal orientation. Some of the oldest trees actually sprawl and link their roots in ways similar to rhizome stems - acting rhizomatically with their roots - and herein lies the trick of keeping themselves powerfully anchored. The Redwood trees of central California are amongst the tallest in the world, but they have surprisingly shallow root structures. Instead, they support one another through a system of interlocked roots, taking their strength from the horizontality and sprawling rather than growing deeply.

This horizontal structural complexity of a rhizome is usually submerged. You must be aware of its presence, otherwise you would be forgiven for assuming that the stem structure of rhizomatic plants is something more akin to a standard plant or tree root.

> *"Rhizomes are commonly confused with roots. Both grow underground. But a rhizome is actually a stem. If you cut a root, a rhizome, and an above-ground stem in cross section, you can see that the tissues in the rhizome look more like a stem than a root. A*

rhizome is in fact an underground, horizontally growing stem." (Plant Rhizome Project, n.d.)

Submerged like subaltern voices. It is here that I went to listen for the multiplicity of resilience and responses to environmental change. It is the multiplicitous interlocking of roots or the spiralling tendrils of rhizome stems that I seek to identify, listen to and convey a possibility of understanding beyond what we commonly take to mean resilience in the face of environmental change in islands.

As a guiding tool chosen from ecology and orientating metaphor to this study, the rhizome provides a way to examine critically, to question the norm, to be curious about the way in which things grow and emerge. It is a tool to challenge the Dominant Image of Thought surrounding resilience which holds us in the Old Story by requiring us to look under the soil and to seek wider and less obvious links. The rhizome is therefore a submerged way of being and knowing that critically questions and intentionally grows in divergent directions and finds strength in this other messiness.

The rhizome is metaphor for messy multiplicity with its non-containable tendrils that defy boundaries, growing prolifically in multiple directions at varying rates, sometimes meeting back up with one another, but not necessarily. This is tendril strength rather than root strength.

It is its own form of resilience, a multiplicitous, horizontal and submerged way of growing that does not adhere to a centeredness and which critically refutes the Dominant Image of Thought. Rhizomes are themselves resilient arrangements - resilient in the more dominant sense of 'enduring or returning', because of their submerged multiplicitous, and persistent structures and life cycles.

"Life has always seemed to me like a plant that lives on its rhizome. Its true life is invisible, hidden in the rhizome. The part that appears above the ground lasts only a single summer. Then it withers away – an ephemeral apparition … Yet I have never lost the sense of something that lives and endures beneath the eternal flux. What we see is blossom, which passes. The rhizome remains." (Jung, 1963, p. prologue)

Yet the blossoms of irises, lilies, the fruit of the rhizomatic blackberry and other rhizomes which are most familiar in my place of origin are northern, continental botanicals. These aren't germane to the islands where I am inquiring. So, I asked myself 'what could be a local manifestation of the rhizome in Mauritius, St Lucia and Fiji?' Why, 'Mangroves of course!' was the immediate thought.

But mangroves are not actually rhizomes. True, they do possess some aspects of a rhizome that I am employing, as will be shown later, yet the challenge for this theoretical assemblage was that mangroves are not rhizomes, but are indeed trees. If I were to hold fast to Deleuze's argument about trees, they would have to be refuted, mangroves included. If the mangrove was to be a symbol of local

knowledge I found the need to first become more comfortable with trees. Below is what resulted. Two ways of thinking about trees.

Trees as Arborescent Processes

Trees grow and appear in two ways in this thesis. First, the Deleuzian sense of trees as arborescent processes is explained and serves as a metaphor for understanding certain ways of working within the International Development Community (IDC), the standard way of understanding environmental resilience and the Old Story itself. Then, secondly, from another angle, trees are an embodiment or symbol of local wisdom and knowledge.

Deleuze, in his *Dialogues* with Parnett (2006) and *A Thousand Plateaus* with Guattari (2013), uses trees as a counter position to rhizomes. He often pits the tree against the rhizome, with the rhizome winning at every occasion: Where the rhizome is decentred and able to grow unevenly in horizontal directions, the tree is centred and rigid. Where the rhizome is composed of real lines which can take inspired flight, the tree is made of straight one-to-one correlations that predictably fix points to positions. Rhizomes are mostly horizontal with occasional upshoots, and trees are destructively top-down. Rhizomes are an alliance, trees are a mere filiation. The tree a pointless, static being verb, the rhizome a conjunction that promises ever-increasing expansion. And the oppositions continue.

The warning from Deleuze is that we should be cautious of trees because they are trying to fool us: rhizomes are real, and trees are tricky. Real multiplicity versus pseudo-multiplicity. In Deleuze's rhizomatic world, trees can do nothing right. They block rhizomes, and worse.

> *"We should stop believing in trees, roots and radicles. They've made us suffer too much." (Deleuze and Guattari, 2013, p. 15)*

There is another differentiation between trees and rhizomes that I make. This one, however, is a 'line of flight' that I take beyond what Deleuze and Guattari have to say, a rupture from their philosophical rhizome. One that will help us to understand how the IDC and the Old Story have certain ways of working that are tree-like, arborescent. This line of flight is the difference between the readily visible and the submerged.

> *"Write, form a rhizome, increase your territory by deterritorialization, extend the line of flight to the point where it becomes an abstract machine covering the entire plane of consistency." (Deleuze and Guattari, 2013, p. 11)*

Rhizomatic essence lies beneath the ground. Tree essence above the ground - trunk, branches, leaves, all above the soil. But, that which makes a rhizome a rhizome instead of a tree, even though it may be tree-like above the soil, is its submerged structure. This differs significantly in structure from a tree

root. I may call the submerged part of the rhizome its root structure even though Deleuze attributes 'roots' to trees alone, rhizomes Deleuzian rhizomes have subterranean 'stems'.

This idea of submersion and visibility is a line of flight, a point of departure, a rupture from the Deleuzian sense of rhizomes and trees and their roots or stems. To me, it is a welcome messiness. I think Deleuze could be comfortable with this - because rhizome lines are still part of the main rhizome and sometimes even re-join other lines. There is never an end, there is always a chance to change again or to circle back.

> *"Every rhizome contains lines of segmentarity according to which it is stratified, territorialized, organized, signified, attributed, etc., as well as lines of deterritorialization down which it constantly flees. There is a rupture in the rhizome whenever segmentary lines explode into a line of flight, but the line is part of the rhizome. These lines always tie back to one another … you may make a rupture, draw a line of flight…" (Deleuze and Guattari, 2013, pp. 8–9)*

The submerged is that which goes unnoticed at first, it's not in our immediate line of vision, so it takes more time, more energy and more attention to notice it, to inquire.

Submerged, Subaltern, the Local Perspective. These are mangrove roots. When the tide is in, they are hidden, but with the tide out, we can see how much a mangrove root resembles a rhizome with its spindly, winding roots. But you have to wait, to watch, you have to be patient to have your chance to witness it. There is no rushing, no demanding.

The Tree, the IDC, and the Old Story often work from its canopy of leaves. It climbs down from the top to the roots. From its geographical, political, positionality of up-there-ness, getting down to the field, down on the ground, to the grass roots.

> *"That's why we contrasted rhizomes with trees - trees, or rather arborescent processes, being temporary limits that block rhizomes and their transformations for a while." (Deleuze, 1995, p. 146)*

But this movement, these arborescent processes, often begin in the highly visible canopy of leaves and make their way down the trunk, sometimes in surprisingly closed ways - in ways that block processes beneath the ground.

> *"We, the Heads of State and Government and high-level representatives, having met in Apia from 1 to 4 September 2014 at the third International Conference on Small Island Developing States, with the full participation of civil society and relevant stakeholders, reaffirm our commitment to the sustainable development of small island developing States." (United Nations, 2014)*

This is the opening of the SAMOA Pathway - an international conference outcome document, an official communique. It makes visible the main themes discussed over the four days, and states the intentions of those who have ratified the document at the conference close. It is, at once, a summary and a path forward. Presented as a co-developed, non-contested document.

I had read a draft of this document before even flying to Samoa to attend this conference. This is an arborescent process. I questioned, doesn't this arborescent communique defeat the purpose of meeting and dialoguing? Does this not present, instead, a scenario where the decisions are all tied up before you even begin, where there is little room to manoeuvre, when there is power and a need to produce such a document to immediately share with the outside world what you discussed, what you decided? It feels like something has been sent down from the canopy to the mangrove root.

This arborescent process is but one example of an IDC way of working that is tree-like, indeed. And I wondered, isn't anyone else concerned with this arborescent process?

Challenged by this seemingly unquestioned mode of operation, I brought this up with a participant during my field discussions. The response was, 'Well, but all these things get done before the conferences … the normal course. And the funny thing is it wasn't even debated, right? It was just signed.'

I continued to ponder, why is it done this way? Why has this become the normal course? Is it because small is not always beautiful when there are so many perspectives to include?

And it echoed again in my mind:

"We, the Heads of State and Government and high-level representatives … with the full participation of civil society and relevant stakeholders…"

Was it because it's about time, limited time?

"…having met in Apia from 1 to 4 September 2014…"

Was it because of expectations and a Dominant Image of Thought?

"…reaffirm our commitment to the sustainable development of small island developing States."

Perhaps when time seems insufficient to climb down from the canopy during the conference itself, arborescent processes take over.

"Power is always arborescent" (Deleuze and Parnet, 2006, p. 19).

Needing to trust trees

I found myself at a crux on a theoretical journeying, pondering the following cognitive dissonance:

> *Trees are arborescent processes, yes this is true in some instances.*
>
> *Multiplicity is the rooting theoretical concept in this inquiry; the rhizome is a manifestation of this. Very good.*
>
> *Yet, what can serve as the locally situated example of the rhizome in island settings - what can be the local manifestation of the resilient rhizome? A mangrove comes close.*
>
> *But… it is a tree!*

Enter the metaphorical conundrum and a need to trust trees that would not be ignored. What follows is a description of part of my journey to come to trust trees and constructing a theoretical assemblage.

In Deleuzian philosophy, as we have seen, the tree and the rhizome are in regular opposition with one another, with the tree always the loser. But this consistent opposition, while providing a counter-point to the rhizome as a way of illustration is, to my mind, forced at times, and too dualistic. Elsewhere he refutes dualisms, and even uses the rhizome to do so.

> *"In short, the rhizome is another step in Deleuze's project of creating a new image of thought. The rhizome is a multiplicity, and as such seeks to move away from the binary subject/object structure of Western thought." (Marks, 1998, p. 45)*

At first, I wanted to believe in the Deleuzian critique, in this dichotomy, that trees have no good side, but it did not feel right with the multiplicity, rhizomatic anchoring with which I had begun. To begin, I believed the Deleuzian tree critique, that power is always arborescent, that trees can only represent particular power/knowledge apparatus themselves, like old stories, which suppress thought for the sake of correct ideas.

But I knew that while many societies relate very little to trees in their everyday modern life, trees today remain a source of wisdom in other cultures and are a firm part of local traditional knowledges. And I could see tree forms representing power relations everywhere: in family genealogy, in the structure of command centres and in channels of transmission (Deleuze and Guattari, 2013, p. 17), and in many other disciplines.

> *"It is odd how the tree has dominated Western reality and all of Western thought, from botany to biology and anatomy, but also gnosiology, theology, ontology, all of philosophy . . .: the root-foundation, Grund, racine, fondement." (Deleuze and Guattari, 2013, p. 18)*

"And trees are not a metaphor at all, but an image of thought, a functioning, a whole apparatus that is planted in thought in order to make it go in a straight line and produce the famous correct ideas." (Deleuze and Parnet, 2006, p. 19)

I agree that it is odd, this domination, and that there is danger in the top-down nature, in arborescent processes. Yes, I believe there are dangers in direct lines and simplicities, believe in an image of thought, but as this pertains to trees, let this intense tree-burning remain a project for Deleuze.

Yet, for this thesis, which takes multiplicity as its major theoretical grounding, a dualistic opposition between trees and rhizomes is too tidy. The position that trees have no positive qualities, and a plethora of bad qualities, is problematic.

I had an itch that another belief in, another view, indeed another story of trees needed to be sought for this theoretical assemblage. After all, trees themselves look differently from varying angles. Like the characters of the Spirit of Haida Gwaii, the branches of trees which protrude on one side are obscured by other branches when viewing from other angles. Across different seasons, their foliage may change drastically, giving an ever-shifting presentation.

Despite Deleuze's warnings, I intrinsically believed there are reasons to believe in trees, to look to them for knowledge, forgiving them their top-heavy-ness and one-to-one nature. They were trusted for centuries as a source of not only knowledge, but wisdom.

"Many people take trees for granted, unaware of their greater significance in Earth's ecology, their medicinal and nutritional properties, or the veneration bestowed on them by ancient peoples." (Hageneder, 2001, p. cover)

I began trusting trees to play a positive role in the thesis when I was searching for a locally-situated botanical metaphor for multiplicity. I was searching for something similar to the rhizome but that was an exemplification of ecological resilience in the islands where I undertook this inquiry.

When I encountered the mangrove, which looks rhizomatic in its root structure, I realised quickly that mangroves are not rhizomes, but are actually trees, and that mangroves are most often forests or non-rhizomatic tree structures. This immediately presented a potential problem if I was to stick to Deleuze's rhizome-tree dichotomy.

I was confronted with the opposing position I had previously adopted that trees are only ever the opposite of rhizomes and can only represent certain ways of working of the IDC and the Old Story that I sought to critique. Yet I trusted that the mangrove could be the missing local-knowledge-link in the theoretical assemblage: that multiplicity came first and foremost, as exemplified by the rhizome via Deleuze's work, and that the local manifestation of this would be the mangrove, through which the thesis would pursue an argument that a new way of working, or a new story is needed – perhaps a

rhizomatic mangrove story - to replace the top-down arborific power of the IDC in small island states working on the issue of environmental resilience.

While grappling with this problematic contradiction, I had an illuminating conversation with a friend. He asked me, 'What do people think of mangroves? Do they have a wisdom, a spirit, do people talk to them, do they talk to people?' I had to admit that I did not know! I could not answer this question for any trees, let alone the mangrove, which had already begun go grow its way into my thesis despite my initial subscription to Deleuze's dichotomy.

These were thought-provoking questions, which I knew would challenge my own beliefs. Could I see with different eyes? Could I attempt to look at trees from a different position?

So I took a trip to trust trees, which involved a secluded week in a forest setting with Deleuzian texts, folk tales from the islands of my study, texts about trees themselves - their historical connection with culture and knowledge systems. In the process of reading, visiting, listening and writing through this conundrum, I discovered a number of pertinent things for this theoretical assemblage.

Drawing upon a multiplicity of resonant texts that came into view during this trusting phase, I will expand here on the concepts of trees as situated wisdom and communicators, and as part of this, how they remind us of a different sense of time and how to listen in a different way.

Trees as knowledge systems and communicators

While today, as part of the Old Story, many principally see trees as a physical resource, this was not always the case. Centuries ago, trees were to essential to human life in vastly different ways, and humans were more attentive to them as a result.

Once, it was commonly believed around the world that trees have tangible presences due to spirits that inhabited them (Kindred, 2004, pp. 26–27). Even today, trees are described by certain personifications from folklore such as the 'weeping' willow and the wise and long-lived oak, for example. They were essential enough in daily lives to even become the basis of a knowledge system, an alphabet in fact. Tree Ogham, developed by the Druids and Celts is well documented by Christian Monks from the 12th and 13th Century:

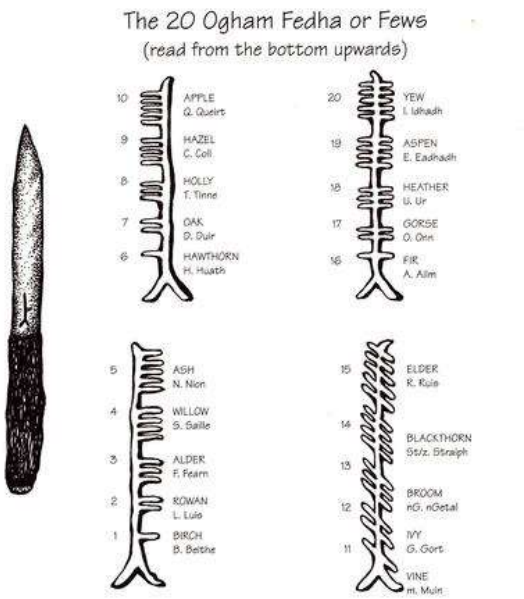


Image Source: (Kindred, 2004, p. 38) Included with permission from the author.

"The Ogham (pronounced 'Oh am') system was an early alphabet used by the Druids and Celtic people. The Ogham script is written vertically and consists of groups of short horizontal or diagonal lines crossing a central stem line to represent each letter. … The Tree Ogham system is a means of communication through each of the 20 Ogham symbols that are carved onto Ogham sticks or staves. Each symbol, called a fedha or few, represents a tree or shrub and its underlying energy or wisdom." (Kindred, 2004, pp. 37–38)

In this way, trees represented a system of knowledge, a way of knowing and communicating that was locally situated.

If these things about trees – their characteristics, their spirits and the Ogham - were more widely understood at one time, but are less prevalent today, what is there to learn now? What can be learnt from trees if you don't believe in Tree Spirits? What if you haven't had a moving experience with trees? How to understand something about communication from a tree today?

Very recent research is revealing things about trees that we humans are finding astounding. Whereas past knowledge practices incorporated knowledge about trees for the purposes of human communication, we are now discovering that trees themselves communicate – between one another and with their surroundings.

"…trees use scent to summon parasitic wasps and other predators to rid themselves of pests." (Wohlleben, 2017, p. 118)

In addition to airborne scent, they also communicate warnings to one another chemical signals and electrical impulses via across the "wood-wide web" underground via fungal networks near their root tips (Beiler et al., 2010). This expands a multiplicity of communication modes that we are only now recognising!

There is still so much we can learn from trees, and are learning from them. When it comes to matters of the physical environment and changing climate, trees can still - today - teach us much about their

own physical domain, about their ecosystems, and how we can read the trees as warnings and improve resilience to environmental change.

I will return to some of these themes later, but for the purposes of more fully understanding why trees are part of the theoretical assemblage, I explore one more concept before entering the mangrove. This is the concept of time. The ability to learn from trees often requires a not only a different way of listening but also a different sense of time and a willingness to slow down, because:

> *"Trees live their lives in the really slow lane, even when they are in danger."*
> *(Wohlleben, 2017, p. 8)*

Tree Time Wisdom

> *"Throughout recorded time and long before, trees have stood as sentinels, wise yet silent, patiently accumulating their rings while the storms of history have raged around them." (Hageneder, 2005)*

One of the areas of tree wisdom, to which we can all become more attuned is the sense of time as cyclical and long-term.

The canopy of the tree – its leaves, flowers and fruit - show us cyclicality of a short-term, annual nature. These elements appear, change and disappear according to the seasons. Meanwhile, the trunk shows us cyclicality of a longer-term nature – year on year, decade on decade and even century on century.

The canopy also evokes the tree as an arborescent process, with leaves falling from the canopy to the ground. Like a policy or a buzzword such as 'resilience' the leaves, flowers and fruit of the tree come and go, sometimes with astounding rapidity. Short-term cyclicality.

> *"Like a path in Autumn. Scarcely has it been swept clear when it's once more covered with dry leaves." (Kafka and Brod, 1991, p. Third Octavo Notebook)*

The trunk of the tree reminds us of a different sense of time – one that is slower, grows cumulatively. Long-term cyclicality. It provides a historical record of the local environmental context. Through tree trunk rings, we can learn about the number of cycles of growth the tree has developed through, as well as about the amount of sun or rain present in a given year that lead to particular spurts or stagnation of growth. Examples from other narrative traditions demonstrate this beautifully, including the poetry of Nobel Prize winning Milosz, who evokes this tree-time connection his piece 'The Wormwood Star' movement of his poetic collection *Hymn of the Pearl*:

"When Thomas brought the news that the house I was born in no longer exists, neither the lane, nor the park sloping to the river, nothing. I had a dream of return. Multicoloured, joyous. I was able to fly. And the trees were even higher than in childhood, because they had been growing during all the years since they had been cut down." (Milosz, 2005, p. 385)

In a world where fast-paced and linear time means progress, the trees offer us a different sense and wisdom of time. This is an environmentally attuned knowledge that time is not always linear, but indeed cyclical. We are reminded that these are long-term cycles - longer than political or policy cycles. And if we take this cyclicality seriously, we might begin to consider that linear time may well be an illusion.

"…the optical illusion of the kind of time whose symbol is the monotonous, rhythm-less, uniform motion of the clock, that silly gadget which attempts to divide life into equal measures - hours, days, months, and years, which never really fit in with the essentially non-mechanical rhythms of growth and of the seasons and of the earth's rotation about the sun." (Watts, 1994, pp. 93–94)

And so, instead, of opposing trees against rhizomes, this inquiry chooses another path, a different line of flight from Deleuze. It trusts trees, despite their shortcomings, trusts them for other reasons. It refutes the tree/rhizome dichotomy but instead takes, as another starting point, that there is goodness in trees and that we can learn from them.

Tree time, and its relationship to change and cycles can be understood as a type of local knowledge or wisdom, with which the tree can enlighten us.

And if you're going to get down from the canopy to the ground, you need to know where you are falling.

"The living wisdom of trees reminds us that learning starts with listening*." (Hageneder, 2005, p. 11)*

Listening to whom or to what? Local Knowledge, the Mangrove

Mangrove as local knowledge

The mangrove is a naturally occurring botanical structure present in all the countries concerned in this inquiry.

"Mangroves are an assortment of tropical and subtropical trees and shrubs which have adapted to the inhospitable zone between sea and land: the typical mangrove habitat is a muddy river estuary." (Hogarth, 2007, p. v)

Mangrove, fieldwork photo

It embodies similar characteristics of both the tree and the rhizome, but is situated locally in the island nations pertinent to this inquiry. The mangrove in this thesis, therefore, is a symbol of the locally embedded line of flight from the tree and rhizome arguments put forth by Deleuze and Guattari.

When the mangrove speaks in the thesis, what is coming forth are the local responses, contributions, and reactions from conversations in Fiji, St Lucia and Mauritius. This has been partially explained in the description of the writing style of the Mangrove Stories, the mangrove has a narrative role to play in this thesis and will be further unpacked in the next chapter on methodology.

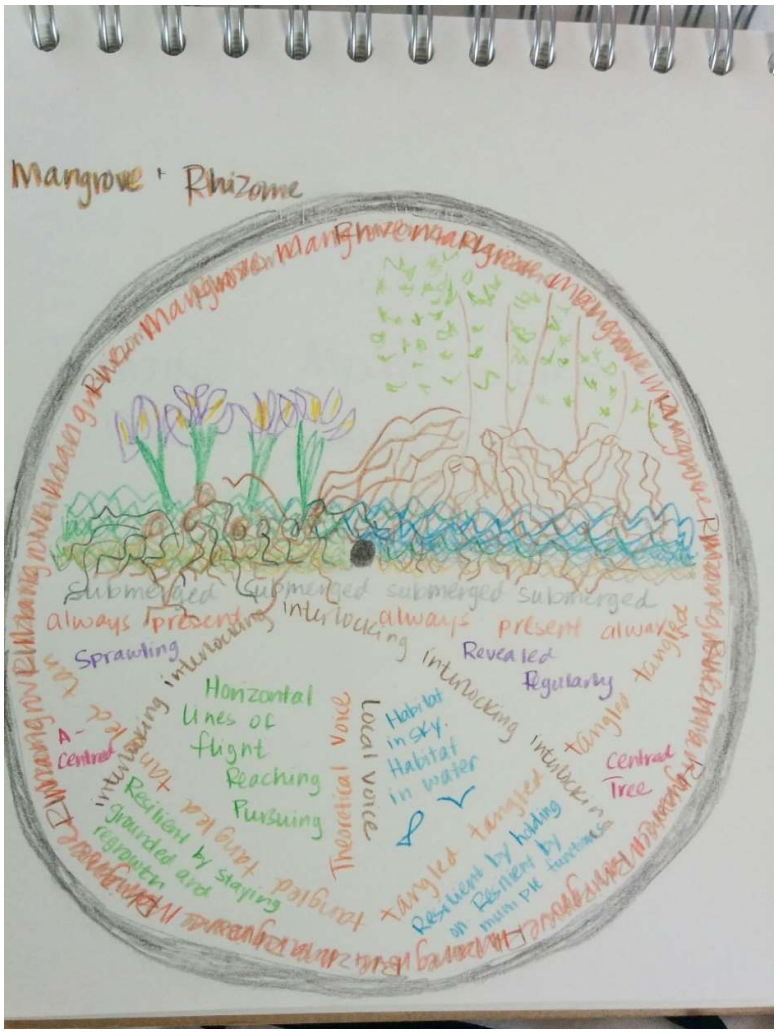
As pertains to theory, however, I wish to briefly illuminate that the mangrove is as a metaphorical tool, indeed its own assemblage, of the selected tenets from the previous concepts. This assemblage is comprised of aspects from the rhizome and multiplicity, whilst still being a tree and embodying the elements brought forth in the previous section on trusting trees. Through the mangrove, these characteristics which thesis wishes to evoke are able to come forth through locally-embedded stories and tellings of responding to environmental change in Fiji, St Lucia and Mauritius.

Botanically, the mangrove is an ecological manifestation of multiplicity:

> *"The mangrove trees themselves trap sediment brought in by river and tide, and help to consolidate the mud in which they grow. They provide a substrate on which oysters and barnacles can settle, a habitat for insects, and nesting sites for birds. Most of all through photosynthesis they supply an energy source for an entire ecosystem comprising many species of organism. Mangroves are among the most productive and biologically diverse ecosystems in the world." (Hogarth, 2007, p. v)*

As a local articulation of Deleuze's rhizome concept, the characteristics the mangrove shares are the tendrils/stems and stems of its physical makeup, it's 'messy' nature, being largely surrounded by mud. Mangroves, like rhizomes, are difficult to eradicate.

It has varying roles and operations: Surviving in brackish waters, organising in complex ways to thrive in both fresh and salt water, receiving the tide and being fully then partially submerged, providing habitat for multiple species of the sea land and air, developing entangled roots, buffering the shoreline against storms and erosion, filtering silt from the watershed to protect the coral reefs.



Mangoves and Rhizomes: similarities and differences, personal journal

Many of its functions operate as aspects of ecological resilience in coastal areas. They are resilient in and of themselves:

> *"The mangrove trees themselves, and the other inhabitants of the mangrove ecosystem, are adapted to their uncompromising habitat, and can cope with periodic immersion and exposure by the tide, fluctuating salinity, low oxygen concentrations in the water - being tropical - frequent high temperatures." (Hogarth, 2007, p. 1)*

And they also provide resilience to the entire shoreline where they are present, offering a buffer to the land from the sea, while simultaneously a water filter in from the upper watershed to the sea.

Botanically speaking, therefore, the mangrove is seen as a key player in the ecological resilience of islands, one further argument for its use as a locally articulated metaphor for local knowledge in the face of resilience to environmental change.

Compass for a Journey

This theoretical assemblage serves as a guiding tool, a compass if you will, throughout the journey of finding ways to story and elements of the New Story of humanity's relationship with the Earth by conversing with mangroves in three island nations. This assemblage speaks to the importance of local knowledge, to the significance of being open to multiple perspectives, including otherwise submerged and unnoticed local knowledge. These perspectives provide a counter position to what are otherwise hierarchical processes from the vertical tree canopy which keeps us in the Old Story.

Next, I will consider what it means to journey with the mangrove, by first revisiting the fictional island of the resilience tree and again encounter *The Spirit of Haida Gwaii.* In doing this, I will explore what it means to undertake this travel, how to listen there, how to have conversations, and how to articulate those tellings to a wider audience.

Sokota: The arrival of *The Spirit of Haida Gwaii*

The tropical storm had blown through quickly the night before on this island where the perfectly pruned Tree of Resilience stood on the grounds of the global meeting place. I have seen by the early dawn light that the island has sustained significant damage, and the Tree of Resilience has itself lost all its remaining leaves. The Plan of Resilience has been lost. There would be no knowing the extent of the damage across the island until more people emerge and examine their surroundings, bringing with them their conversations, stories of survival, concerns and plans for recovery.

I leave the centre of the island and walk to the shore, finding myself in the company of a mangrove forest. The sun is so blinding, coming over the horizon, that it, and they, are nearly upon us before we notice them. The mangrove and I are captivated by this suddenly-appearing canoe.

'Climb up so you can get a better view,' the mangrove says. Together, we can see that the canoe is filled with the most curious arrangement of passengers. Perched up safely in the mangrove forest, I observe as they row nearer us on the shoreline.

'How many are they in that boat?' I wonder. 'Is that a grizzly bear sitting in the front with its back to us, facing a man?' I ask the mangrove.

'Yes, he is facing a man who holds a staff,' the mangrove replies.

'From here, I can see a beaver,' offers another.

'Could that be an eagle?' asks one mangrove out of sight to my left.

'There is definitely a frog balanced up there, but not rowing,' offers a mangrove further down the shore.

From the mangrove forest, up and down the coastline, we piece together from our different vantage points that there are around 13 passengers and rowers in the boat. Some are obscured by others, all sitting in different directions but confidently and strongly moving in a single direction toward our spot on the shore.

This is the strength of the mangrove, I think to myself, drawing a connection between the mangrove and the boatful of rowers. Knowledge cannot come from simply one place. Full knowledge of a complex situation must come from different perspectives.

Then, from between a wolf, a raven and a beaver, emerges one of the rowers. With a firm face bearing gills and the lip labret of a high-caste woman, she slinks out of the boat, easing herself gracefully into the water and swimming the remaining distance to the shore.

Bill Reid's Dogfish Woman (Qqaaxhadajaa) Image Source: https://www.sfu.ca/brc/imeshMobileApp/imesh-art-walk-/dog-fish-woman.html

She approaches the mangroves and me, introducing herself as Dogfish Woman, a shark who is a woman, a transformation of multiple forms, the result of time spent under water, having been captured from the land.

She is human but bears the gills, fins and crown of the dogfish who took her many years ago. She now walks the human and swims the nonhuman realm, claimed by both crests represented in the Haida boat, Eagle and Raven alike.[3]

She holds in her hands a cluster of leaves, which we understand as having come from the tree in the centre of the island. These, we discuss, hold the tracings of a resilience plan. I explain that I have just come from that gathering where the tree was presented and some of its leaves distributed. We have a brief talk about regeneration and renewal, wondering what will come of the tree and what will replace its leaves. Will it be a tracing, a replica of what was there before, or perhaps instead it will be a new map? How it might be developed and who might be involved? How little I know of what I will learn from the mangroves in the interactions to come.

[3] This understanding of Dogfish Woman's origins and characteristics is taken from *The Black Canoe*, a textual and pictorial account of the creation of Bill Reid's sculpture, *The Spirit of Haida Gwaii.* (Bringhurst and Steltzer, 1992)

3. Researching through Conversation and Story: Coming to learn Narrative Inquiry

In this section I provide as a methodological exploration to the overall inquiry. I describe the strange pull which silently drew me away from an initial research approach and towards Narrative Inquiry by explaining some of my personal stories of identification with story the power of narrative. I briefly discuss researcher positionality and ethical decisions. I introduce some of the other writings that inspired my own approach to this Narrative Inquiry and briefly explain how Deleuze and Guattari's tracing-mapping concepts influenced my work. Sections about where and how the stories were pursued describe aspects of fieldwork. Some of the particularities of researching in small island contexts that informed my work in Fiji, St Lucia and Mauritius are also explored. I discuss the role that talanoa played in the inquiry and how I found a path to narrative analysis through conversation writing. I end with an explanation of the mangrove voice as a narrative tool, providing a precursor to the first Mangrove Conversation in the next section.

Being Silently Drawn

"Let yourself be silently drawn by the strange pull of what you really love. It will not lead you astray."

~ Jalāl ad-Dīn Muhammad Rūmī

This encouragement, and promise by the 13th Century Persian and Sufi poet, Rumi, characterizes my coming to be acquainted with narrative as a form of inquiry.

My own 'strange pull' to narrative inquiry, and subsequent discovery of the New Story movement, has been one characterized by listening to resonances. It links to my time living in the Republic of Armenia from 2004 - 2007. An innate curiosity about oral history and tradition was fueled during this time, when I was surrounded by regular recitation of national poetry and a culture that revers its mighty writers. Clutching a coffee cup with the fine black grounds settling to the bottom of the dainty china, or crouching around a bowl of sunflower seeds, *Papiks* and *Tatiks* – Armenian Grandfathers and Grandmothers – regularly tell accounts of atrocities endured during the yet to be internationally recognised 1915 Armenian genocide. These stories of suffering were, and continue to be, handed down orally over generations.

This resonated with a vague awareness, carried with me since childhood, of a distant Native American linage on my maternal side. My curiosities about this family heritage, however, were never able to be answered, either because the stories were hidden or forgotten.

Oral history, storytelling, human injustices, and loss of story are some of the sites that silently pulled me toward Narrative Inquiry. They are the sites from which I am driven to work with a critical approach to, with the deep-seated drive to challenge grand narratives that silence human experiences. This is the place from which I unknowingly cultivated a desire to listen to the submerged mangrove.

These personal experiences have drawn me to storytelling, given me a respect for locally-grounded knowledge and lived experience, all heightened by an awareness that often this wealth of knowledge gets lost.

There was no 'aha moment', no grand occasion of deciding to use a narrative inquiry approach to my research. Instead, it gently crept in. It came as an admission that I could not bring myself to follow through with an earlier proposal to develop a *typology of environmental resilience in three Small Island Developing States according to multiple stakeholders along a policy proximity spectrum*.

After a gentle but sobering interaction with a group of Pacific Researchers, I began to admit what I knew all along, which is that this project could not be forced into a tidy shadowbox. It needed to be

undertaken in the way it has ultimately been presented here. And, eventually, I submitted to being silently drawn to narrative inquiry.

Identifying (with) Narrative Inquiry

It is not only that I had been silently drawn to what I really love – that this methodology that speaks to my own lived experience and ways of understanding. Alone, that would have felt simply like an indulgence and, for me, would not have been enough to take up this particular approach to this research project. More than this, I have done what the situation required in order to produce a meaningful presentation of what I have learned through my inquiry.

To have followed that initial proposal for a typology of environmental resilience, attempting to neatly code and categorize the insights from more than 50 interviews and 10 focus groups, and to present tidy findings in a something akin to a Myers Briggs Type Indicator (Myers & Briggs Foundation, 2019) would have, I felt, resulted in a categorised product devoid of any lived, real or helpful meaning. It would have squeezed out any essence and would indeed be contributing to the very approach or project that I was trying to trouble. In short, it would have been feeding an Old Story. I decided instead to pursue an approach that would allow for some of the richness of lived experience to emanate and resonate with others.

Narrative Inquiry today encompasses a vast range of practices from the self-interrogating form of auto-ethnography to the interpersonal art of collaborative writing. It welcomes written practices and performative acts. Whichever approach you take to Narrative Inquiry, however, at its core it involves story - whether written, or spoken, or performed.

Beyond this, there were multiple reasons that Narrative Inquiry drew me slowly in, reasons why it was appropriate for this particular study.

For one, I understand Narrative Inquiry's own story of becoming as originating from a post-modern emphasis of deconstruction, boundary pushing, 'this is not good enough'ing. It sits well beside the acknowledgements that "Another Knowledge" (Santos, 2008) and a "More Beautiful World" (Eisenstein, 2013) are indeed possible.

Then, it troubles the standard practices of assessing the quality of research according to measures of 'reliability' or 'validity'. Narrative Inquiry demands that not all research be measured similarly:

> *"According to Polkinghorne [1988], we need to re-orientate our measures in using narrative. It is not satisfactory to apply the previous criteria of more traditional approaches, that is to say the measures of validity and reliability, to narrative." (Webster and Mertova, 2007, p. 21).*

This is one of Narrative Inquiry's appealing lines of flight - arguing for and offering different assessment criteria. This demand indeed chimes with my experiences in the field of comparative and international education, where, together with colleagues, I have cautioned against some of the practices of international ranking mechanisms of national educational systems (Baird et al., 2016; Crossley and Sprague, 2012). It is my belief that much of what is valuable in life is not, and should not bend into conformity of becoming, measurable in a comparable way. This kind of measurability mandate has crept into our everyday lives, particularly in a world of increasingly uncertainty where humanity puts increasing faith in what is measurable. It gives us a sense of control that eases the fear of being between stories (Eisenstein, 2018).

This measurability mandate evidences itself in the realm of resilience in island states as well. As mentioned in the previous chapter, much of the resilience work being undertaken by the IDC in Small Island States has an emphasis upon measuring resilience. My research serves as a counterpoint to that need for standard and comparable measurability of resilience to environmental change sought within the IDC. As such, this project itself needs to be assessed by other means, and Narrative Inquiry offers other avenues.

Within the wider body of qualitative research, others also call for nuanced modes of measurement. Guba (1985) offers four criteria of credibility, transferability, dependability and confirmability. While Huberman argues for authenticity and familiarity (1995), I read this as something like resonance: the "intensification and prolongation of sound produced by sympatheticvibration," ("Resonance," n.d.). The act of listening for and pointing out that which resonates between stories, between lived accounts, has been a guiding force along this research journey, both in the seeking of and sharing through stories. Resonance not only allows us to listen and learn, but it further motivates us to act when we find truth in what another is sharing. For my part, it has motivated me to work towards the New Story, and I hope this thesis will encourage others to do the same.

Very importantly, Narrative Inquiry allows for and indeed incorporates the old and the new narratives we carry with us and create. It supports the Old Story - New Story orientation that drives this inquiry. As Speedy highlights, the 'narrative turn' as she terms it, is capable of blending the 'old' stories we honour from the past, carrying them into the new stories that we are creating: "the 'narrative turn' is both enjoying a postmodern currency and is part of an age-old tradition in many cultures" (Speedy, 2008b, p. 45).

Narrative also offers a way of addressing historical and contextual realities, including those of injustice which researchers should be careful not to perpetuate through their inquiries.

To illustrate, and by way of drawing on examples from recent cyclone recovery in the Pacific Islands, the Baha'i International Community's Statement to the 2016 World Humanitarian Summit opens with a bold and unifying declaration:

> *"The human family is one. Sharing a common heritage received from those who have come before, as well as a joint legacy to bequeath to those who will follow, the peoples of the world are connected in ways that can no longer be denied or ignored." (Baha'i World News Service, 2016)*

Heritage necessarily includes knowledge. A cornerstone of the Baha'i ethos behind this global statement to the first-ever UN convened gathering to focus exclusively on an Agenda for Humanity in 2016 is a deep-seated belief that knowledge and learning ought to be open to all. This openness of knowledge is part of the ethos of the New Story movement as well by drawing upon collective experience, acknowledging our human interconnection and the collective knowledge, which includes stories from the far past up to the present.

To my mind, an approach that treats all knowledge as collective human knowledge goes some way towards addressing the project of decolonising research, explored in the previous chapter, because it gets us away from the ownership of knowledge tensions that have been demolishing of peoples and cultures in the past. True, it does not address the injustices suffered, and neither will this thesis get deeply into those issues, but acknowledgement that the Colonial tide has covered and submerged - some would argue tried to erase - much local knowledge in painful ways, and we all have a duty to do better. On the dawn of a New Story, however, this tide is rolling back while processes of decolonising research methodologies emerge.

Our human stories and knowledge, in this sense are shared, collectively as one humanity on Earth, and equally, our responsibilities are shared responsibilities. This includes treating one another's knowledges as sacred and valued and to look for ways of blending these into a New Story of humanity's relationship with the Earth in order to meet today's environmental concerns.

During my reflections on research ethics, this immediately ran me into a quandary of self-doubt, punctuated by questions about my responsibilities, my 'positionality' as a researcher interested in local knowledge (Marchand, 2003). As a researcher undertaking an inquiry within contexts and countries other than my own history of origin, what right do I have to be doing any kind of research in these islands, amongst people, some of whom consider themselves indigenous? What right, and what responsibilities do I have?

Any socially-based inquiry, aside perhaps from autoethnography, requires participation of 'others' and this slippery slope of 'othering' rears its head quite quickly. Plus, the documented insensitivities that

some researchers perpetuate, which, "stirs up silence, it conjures up bad memories, it raises a smile that is knowing and distrustful," (Tuhiwai Smith, 2012, p. 1) have been quite enough to cause more than one crisis of confidence within me along the way.

Talanoa with a mangrove: A field note from Vuda, Veti Levu, Fiji while sitting in a literal mangrove cluster on the shore Nadi Bay, April 22, 2017:

Dear beauty, what can you teach me, for surely, I have much to learn. I've cast you in my story, yet I know nothing of your nature from first-hand experience. Your meandering way of growing is remarkable. Reaching simultaneously upward and downwards, over and across, clinging and reaching like earthen air exposed stalagmites and stalactites simultaneously. The epitome of regeneration and adaptation, taking what you need from sun and sea and air, all the while providing shelter and regeneration without even knowing it. As I sit here, still, your amazing residents emerge. Your dozens of one-clawed crabs crawl up and wave their pincers as if in some sort of defiance, or communication, I am not sure, but it appears bold and warring to this human being. It is a choir, silent to my ears. A communication I am too outsider to decipher. I hear the birds chirping amongst you too. The tide is slowly returning. The wind gently blowing. Your bed is rocky here, not dirty, save what human rubbish clings to you. This is not murky or unpleasant in any way. Here is peaceful, rugged yes, tangled surely. There is a sacredness here. How much you do without knowing. How much you teach without even intending.

Being aware of these sensitivities and the post-colonial arguments in which they are embedded, I take my 'insider-outsider' (Louisy, 1997; McNess et al., 2015) researcher position very seriously. At times, I have been told by colleagues and mentors that I have done so too seriously, but I do not think that there is such a thing as over-awareness or too much caution in this respect. I tread perhaps too lightly in the 'field' because of it, perhaps too apologetically. One way I eased my concerns was to check with fellow researchers in Fiji, St Lucia and Mauritius, asking and reflecting repeatedly, 'Is it right for me to be here researching this topic? Do I have the right to use this method, have I understood or employed it in a way that is appropriate?' and using these conversations to inform my continued inquiry.

On the whole, my experience has been that people wanted to express their concerns about environmental changes in a way that the international community could hear. They also had clear messages to send out to others about what 'we' as outsiders could learn from 'them', those at the 'sharp end' of environmental change.

This does not mean that all knowledge is fair game. Far from it. Especially in cultures where certain types of knowledge are carefully safeguarded (Nabobo-Baba, 2006) by community elders, for example.

Those of us who are 'outsider' researchers ought only enter the mangrove when invited, and when the tide is out. And not go where we are not welcome. It is therefore encouraging, from my vantage point, to see safeguards like research permit processes being instituted as a matter of raising awareness of the preciousness of knowledge and culture and the responsibilities that all have in treating this with respect - a process I was more than willing to submit to.

That's my kind of story!

The development of my narrative style of having conversations, or more appropriately one might call them 'listenings', with mangroves, has been inspired by texts from ethnographers and story tellers who work with indigenous groups and in island settings. These have been covered briefly as fellow voyagers in chapter 1. Keith Basso, in his *Wisdom Sits in Places* (1996) explores ways in which traditional knowledge is connected to physical locations through the stories and parables that derive from these locations. Researching with Native American Western Apache in the plains of Arizona, he travels with them to particular locations and listens to the stories of how these places, like 'Fly's camp' and 'She carries her brother on her back' got their names. His approach is to simply listen to elders telling the long-held stories of how these place names were derived. In a similar way, I situate myself in the island mangroves and listen to stories of resilience. In my interviews and focus groups, I asked for stories of how communities have responded to natural occurrences and understandings of what resilience means to those who have experienced them first-hand. I am reminded:

> *"An assignment of this delicacy challenges the text-building pen as much as it does the truth-seeking mind. Mulling over imperfect field notes, sorting through conflicting intuitions, and beset by a host of unanswered questions, the ethnographer must somehow fashion a written account that adequately conveys his or her understanding of other people's understandings." (Basso, 1996, p. 110)*

Moving to the idea that a mangrove can convey a multiplicity of ideas and perspectives, this is a technique used by Caribbean writer Maryse Conde in her novel, *Crossing the Mangrove* (1995). Conde, a Guadeloupean writer of historical fiction, uses the mangrove as metaphor in her novel, which tells the stories of how the central character, Sancher, meets his death. Each chapter is a story from another perspective, each with a different community member arriving at the funeral and presenting their own personal story of how they knew the deceased and what little piece of the puzzle they hold of his life and death. By the end of the book, we have listened to a range of stories, all with varying perspectives, all making up one overall picture. Through this technique, we can see that not all stories have to be commensurate, but that they do add up to some form of a whole. As one of the book's reviewers put it, "Memories and histories are intertwined here like the roots of the mangrove, indicating that the various identities are engaged in an active interplay where new forms, and new *imaginaries* are possible" (Carter and Torabully, 2002).

Does not each person hold their own story, and are not our memories are different, our perspectives, angles and appreciations are diverse yet adding up to a rich whole, a rich story? As held in the Nagual tradition of the Toltec, we each hold our "dream of the planet" (Ruiz, 2018). I am interested in the variety of perspectives, particularly those that speak out against a dominant image, because it is in these places of friction or disagreement where a new story can potentially emerge. It is for these reasons that I have developed a narrative approach of listening and bringing together multiple voices and perspectives through the voice of the mangroves.

Sokota through the Mangrove

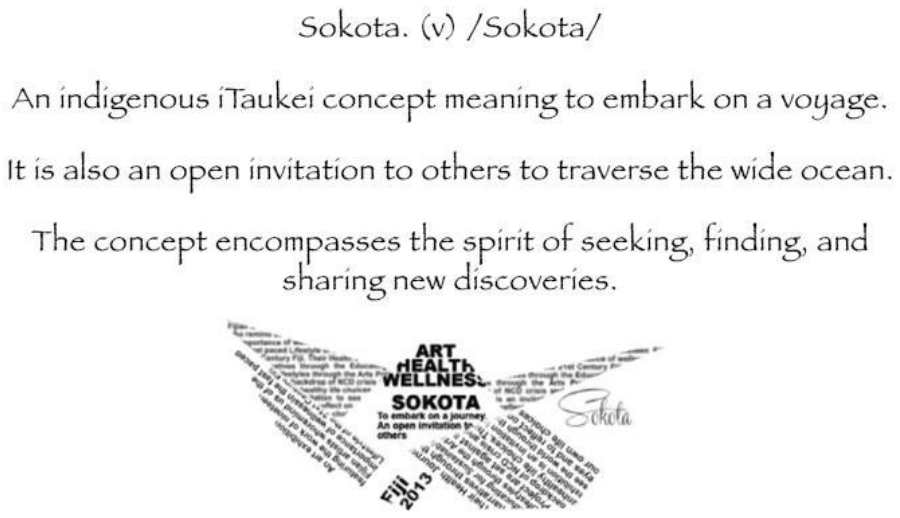


Image Source: Sokota - Art, Health, Wellness project, Fiji, 2013 https://scontent-lhr3-1.xx.fbcdn.net/v/t1.0-9/1465264_248455498639748_717935053_n.jpg?oh=b8808cd0491732f22fe210ff8dfa8c43&oe=5AFFD8BF

Undertaking the fieldwork of this project was akin to a voyage, and to articulate the process, I draw inspiration from the iTaukei - the Indigenous Fijian concept of *Sokota*. *Sokota* is not only to undertake voyage in a physical journey across the oceans, but the concept furthermore "encompasses the spirit of seeking, finding, and sharing new discoveries" (Koya Vaka'uta et al., 2013, p. 2).

In this section of the chapter, I explain in more detail the where and how of this inquiry, but first I touch upon one more concept from Deleuze and Guattari that helped orient the journey.

Mapping and Tracing:

I draw upon one of Deleuze and Guattari's other principles, namely that of mapping and tracing from *A Thousand Plateaus* (Deleuze and Guattari, 2013). In my reading of Deleuze and Guattari, maps are real and tracings are imaginary replications: "What distinguishes the map from the tracing is that it is entirely oriented toward an experimentation in contact with the real" (2013, p. 12). In the case of this inquiry, the map is the local and lived experience of responding to environmental change. In conversation, this gets discussed through the lens of resilience as a way of facilitating discussion and an approach to finding a multiplicity of ways to understand responses to environmental change. Meanwhile, the tracing of resilience is the IDC way of using the concept: it is an externally developed concept, applied within island nations from outside perspectives. For me, this is the difference between local knowledge and external knowledge. The concepts are not mutually exclusive; there is undoubtedly overlap between the map of resilience and the tracing of resilience, but I sought to understand as much of the mapping as possible before encountering the tracing, in order that the tracing would not obscure what I was able to see of the map.

For this reason, only a small literature review was conducted ahead of my trips to Fiji, St Lucia and Mauritius, enough to lightly scope the breadth of the resilience concept and to give some guiding hints about the DIOT pervading resilience work in island nations from the frame of socio-ecological dynamics. I stopped short, however, of conducting a full, literature review on the topic because I found this counterproductive to obtaining a true mapping. It was important to me to avoid as much as possible the search for a standard understanding of resilience with the objective of learning from those at the sharp end of environmental change.

Where the story was sought:

The fieldwork of this inquiry took place within island nations in the three regions of the Indian Ocean, the Caribbean and the Pacific. Most of my time was spent in Fiji, St Lucia and Mauritius, on visits lasting between three and six weeks. Shorter trips to Samoa and the Bahamas coincided with international United Nations and Commonwealth conferences focussed on climate change, sustainability and islands. My trips to Fiji were four in total, and once to each of the other countries.

First, I attended the UN SIDS Conference in Samoa, which was a chance to get familiar with some of the different perspectives and interface between the local understanding and the IDC. However, most of what is presented at such high-level conferences is quite mediated by the IDC itself. So, it became important to search and listen closely to the more submerged marginal voices in order to get a glimpse of the map.

During this initial trip to the Pacific, there was a chance to engage with individuals from island nations around the world, though, the Pacific presence was strongest of the regions and the Samoa presence in particular was felt most strongly. Following the UN conference in Samoa was a trip to Fiji where initial conversations about the concept of *vanua* and the current day application of indigenous knowledge with respect to environmental change. This began to inform my understandings about the depth of knowledge that was being exercised, and I wanted to try and find that equivalent knowledge in the other two regions.

In Mauritius and St Lucia, I repeatedly attempted to locate stories and to access some oral heritage, but finding this difficult as an outsider, I had better luck conversing about lived experience and IDC work practices. Following this, back in Fiji, I found deeper understanding, particularly with the view to understanding the concept of the *vanua*. I then took two more trips to Fiji, following Tropical Cyclone Winston as an opportunity to return and have further conversations some individuals and listen to stories of their lived experiences of that storm and recovery - stories of resilience in the face of the largest hurricane ever on record in the Southern Hemisphere.

How the story was sought:

The nature of my time spent during the field visits of this study was broadly ethnographic in approach, however, I do not claim to have conducted a strictly ethnographic study. I spent as many weeks as possible in Fiji, St Lucia and Mauritius, having as many conversations as I could and experiencing each place, its ways of working and being as this part of the very inquiry itself alongside interviews and focus groups. I tried to be sure that the fieldwork experience was not a fly-in, fly-out, reside in a hotel bubble. In this way, my inquiry draws upon some experiential knowledge 'being' in a place, with the innate sense that 'wisdom sits in places' (Basso, 1996). Where possible, I stayed with families during my time in the three islands. In addition to the conversations had as part of interviews and focus groups, I had discussions with drivers and passengers on local transport, when I walked to interviews or the grocery story, I struck up conversations with others walking to or from work; I accepted invitations to visit family homes and eat meals together and go on weekend outings with new acquaintances; I was grateful for the chance to participate in Diwali preparations, attend beach BBQs.

My attendance at Commonwealth and United Nations conferences in Bahamas and Samoa were additional opportunities to learn about broader regional experiences and to have wider discussions about the environmental concerns facing islanders and how they understand resilience in the face of these changes.

While carrying out my inquiry, it was important to maintain awareness of and exercise certain practices particular to carrying out inquiries in small states, including maintaining confidentiality and informed consent.

Pertaining research in small state settings, Louisy, a Saint Lucian Head of State and researcher calls for, "more flexibility in the conventional strategies traditionally prescribed for the conduct of qualitative research" (1997, p. 218). Nabobo-Baba, a Fijian researcher and regional authority on Pacific research methodologies, similarly cautions against the differences between the ethical protocols within institutions and "the practices lived out in the knowledge, as ontology and cosmology are, held by indigenous persons" (2004, p. 29). Some flexibility was therefore necessary for this study.

Powney and Watts write that while maintaining anonymity in large scale studies can be challenging, that, "Concealing the identity of informants becomes still more problematic in small-scale educational research" (1987, p. 184). I discussed the challenges of confidentiality in my ethical clearance step with a fellow researcher, and on balance, it was felt that I have a duty to maintain confidentiality to my informants. I have done my utmost to provide confidentiality, for example by not using participant names in the mangrove conversations and changing place names. Anonymity cannot be guaranteed as the identity of the informants will be known to me and was furthermore impossible for focus groups. It remains important to understand that due to the highly personalised and transparent nature of small state relations, which operate within modes of "managed intimacy" (Lowenthal, 1987) readers from the islands involved in this inquiry may nevertheless find it possible to identify particular voices, despite any steps I taken in this regard. This is not necessarily highly problematic, as Louisy argues "perhaps people in small systems are so used to openness in the lives they live that the researcher has less need to resort to distortion of the data in relation to the reader of the complete study" (1997, p. 216).

While written consent in the UK and other western settings is intended to put participants at ease, it can have the opposite effect in some cross-cultural settings, creating instead, what Israel describes as an "artificial and culturally inappropriate bureaucratic process," (2006, p. 68) which may be inappropriate in what are otherwise considered developing country contexts (Creed-Kanashiro et al., 2005). I understood my duty to ensure that all informants have given informed consent by explaining to them what the inquiry was about and that their responses would be used in my thesis and was sure to explain that participation was voluntary, and they could withdraw their contribution at any time. While it felt at times overly-formal, all participants did receive an information sheet that explained the research study and their rights as a participant. Signed consent was obtained in most cases. Where it is felt that asking for a signature was likely to be a barrier, verbal informed consent was obtained.

Each recorded interview and focus group was fully transcribed. Transcripts were shared back to participants. This sharing invited their feedback, correction, and further input where they desired. I undertook the entire transcription process myself, and this was part of the analysis itself.

All along the way, I wrote copiously: fieldnotes of the day to day experience, reflections following interviews and focus groups. In this way, emergent themes and understandings came along while still in the field. In this way, I began "circling the text" (Adams St.Pierre, 1997) while still doing fieldwork, even before I knew I that I would be incorporating narrative analysis in the thesis.

I read texts along the way as well: local myths and legends, memoirs, texts on indigenous knowledge and approaches to learning. These were read in the field alongside other theoretical and philosophical texts and all this learning was simultaneously shaping the research, some of which appear in this thesis.

Little Conversations leading to Talanoa

"These little conversations
If I try my very best
You know I never could say anything
In twenty words or less
Somewhere, sometime, down the line
Someday I may confess
And tell you all, well that's all

Well the little conversations
On me are very rough
They leave me all in pieces
You know there's never time enough
It's like a book with missing pages
A story incomplete
It's like a painting left unfinished
It feels like not enough to eat
Starvin'"

Lyrics: 'Little Conversations' (Concrete Blonde, 1989)

When I was in the middle of writing the mangrove conversations for this thesis, someone very dear to me gently pointed out that I was becoming incapable of having 'little conversations'. I had lost the ability to do 'short and sweet,' and the lyrics to this song by Concrete Blonde illustrated that conundrum. This is a good example of some of the methodological dilemmas I experienced when I was in Fiji, St Lucia and Mauritius asking people about their environmental concerns and responses to them. This helps explain why I turned to *talanoa* as an approach to conversation, finding myself able to apply it more and more as I went along.

‘How will you explore environmental resilience with people if there are no commensurate words or if people are unfamiliar with the term?’ I was asked. I wasn’t sure, but I knew there could be a common language, even if we struggled to find the right words. I knew, if there was patience and a willingness to share, that we could find the 'yes, that's what I meant' moments of finding common ground, of finding resonance. That kind of exchange can be facilitated by t*alanoa*. It took me quite a while to trust in that process fully, but it did emerge, and I began to trust it and was able to abandon some of the more structured approaches to interviews and focus groups with which I had been more comfortable.

Furthermore, with an awareness of the insider-outsider dynamics of cross-cultural research (Robinson-Pant, 2005), I approached the fieldwork with a desire to honour the locally-respected research methods where these were identifiable. Being aware of the benefits of the Pacific *talanoa* methodology, incorporation of this was my aspiration.

Pacific researchers are increasingly stressing the importance of using local methodologies for social science research in Pacific Island Countries (Farrelly and Nabobo-Baba, 2012; Nabobo-Baba, 2004; Thaman, 2009; Tuhiwai Smith, 2004). They have challenged “the unilateral assumptions of a universal model of research, with the Academy being the central authority in knowledge production” (Thaman, 2009, p. 5). Over the past two decades, Pacific researchers have been articulating the benefits of indigenous research methodologies and methods including how the “use of culturally relevant values and methodological frameworks enables a deeper analysis and more contextually sensitive understanding and interpretation of research findings” (Koya Vaka’uta et al., 2015).

Talanoa is a cultural communication practice within the Pacific Islands characterised by storytelling and consensus building through dialogue (Farrelly and Nabobo-Baba, 2014; Prescott, 2008). It was explained to me that *talanoa* can be equally engaged in during a formal ceremony, or around a cup of coffee with a colleague or alongside daily activities at home with a family member. More than this, however, it has become part of a move to decolonise research methods by becoming an ever-widening qualitative research practice amongst Pacific researchers and beyond. In this way, it can be described as a mode of dialogic inquiry. Used for its ability to create meaningful conversation, it is seen as a more culturally-appropriate and familiar approach to the focus group or interview. In particular, *talanoa* is increasingly being used as an approach to discussing and researching topics of environment and climate change (Lagi, 2015; Nainoca, 2011).

One example of *talanoa* operating as a form of inquiry was articulated in a discussion with a Fijian NGO worker wherein she described and how *talanoa* is used in their community-based work:

'One thing that's also quite prominent in Fiji, particularly for the iTaukei community is dialogue. There's a lot of dialogue. And sometimes, at the frustration of visitors, yeah. The dialogue goes on for too long, but it can go over a long process, but for us, that's normal because you need to feel that sense of trust, and to build and they need to know that it's fully understood before they make an informed decision. So, we can't get actions or deliberations from just one workshop, just one meeting. For us, the real discussion comes outside of that meeting, outside of that formal meeting, during the discussions around the Talanoa, you know, that's when the tough questions come out, because they're too shy and don't want to ask in front of everyone. Again, it's going back to having that connection and being able to approach that person at the personal level, and then asking that question.'

My own capacity to work with a *talanoa* approach grew as the fieldwork progressed, strengthened by the fact that my fieldwork both began and ended in the Pacific. I incorporated it where possible, however some sites were more formal in culture with a particular expectation about distance between researcher and participant. Discussions with policy makers, and researchers, for example, were typically more formal in nature, taking the form of a semi-structured interview in take the form of a "structured conversation" (Davies, 1997, p. 135). In these more formal settings, the general structure of the conversation was predetermined by deciding which areas to cover and main questions to ask, allowing for the detail of the structure to be determined during the interview itself (Drever, 1997, p. 1). I used a loose interview guide to develop initial questions but adapted the wording and pattern according to the need of the situation (Bryman, 2004). Where these were group conversations, I employed a focus group approach, using what Greenbaum calls a "minigroup" with four to six persons. The advantage of this being the depth which the conversation can take with fewer people biding for the same amount of time, which was typically 60 to 90 minutes (Greenbaum, 1998, p. 2). For the focus groups, I adapted Krueger's (1994) sample topic guide, using the proposed sequence of steps and different types of questions: introduction, opening question, introductory question, key questions, summary question and final question.

Some meetings, especially those with community members or NGO leaders, were naturally more conversational and came closer to a *talanoa* approach. My approach to each conversation therefore depended completely on the site, the setting of the meeting, and the participant(s), trying to be as receptive as possible to their expectations and to modify my approach where necessary.

As an outsider, I held nascent understandings of *talanoa* from previous work with Pacific researchers. I found it helpful to frequently discuss the use of this practice with them throughout my inquiry. I was highly-sensitive to my potential misappropriation and sought regular discussions with Pacific

colleagues and researchers about my use of the term, the method and including it in my inquiry and thesis. I was happy to find a warm reception to its use amongst non-Pacific researchers. As a growing method, those I consulted seemed pleased that it is a method which is being picked up by non-Pacific researchers (Farrelly and Nabobo-Baba, 2014). A growing body of work serves to make *talanoa* more visible in the Pacific and beyond, and within the realms of research and beyond. Recently, at the 2017 Conference of Parties (COP) in Bonn, where Fiji was the chair of the UN Climate Talks, Fijian Prime Minister, Frank Bainimarama put *talanoa* in the spotlight, proclaiming *talanoa* the "founding principle of the conference" (Harvey, 2017).

I tried to increase my understanding of *talanoa* along the way, and to incorporate aspects of it, with an open mind and a desire to learn from and share in dialogue with participants. The return trips to Fiji allowed me to strengthen my *talanoa* skills. Some key participants were interviewed three and four times, and a good amount of trust had been established, where we could converse easily, sharing stories and learning mutually along the way.

Understanding through conversation: finding a path to analysis

Conversation, as a form of communication, is often choppy and it circles back around on itself. In this way, I find it rhizomatic. Once you start a conversation you may soon find that there are multiple conceptual strands of discussion happening concurrently. Some of those you complete with your fellow discussants, others are left unanswered. Rarely do I find that the deeply fulfilling conversations have answered all the questions or rounded off all the sprawling tendrils. They leave you in a sense of wonderment which can almost always be revisited.

When it came time to make sense of the more than 70 conversations in Fiji, St Lucia and Mauritius about environmental change, it seemed a natural, yet simultaneously uncomfortable transition from a process of dialogic inquiry and story seeking over into one of story and conversation writing. I understood that Narrative Inquiry can be a process of inquiring as well as a form of analysis in itself and/or a form of presentation.

In the same way that I found discomfort in the 'little conversations' while undertaking the fieldwork, I similarly encountered an uneasiness when I was in front of my computer and notebook, immersed in transcripts, fieldnotes, undertaking the process of sense-making and presentation stages of the thesis. I found myself in need of more conversation. I soon found myself writing it.

I held onto the promise that "Narrative and the stories it records, offers research a way to highlight those understandings often not revealed by traditional modes of inquiry" (Webster and Mertova, 2007, p. 14). Without a particular method in mind, I was reassured that I was voyaging alongside other

narrative inquirers such as Richardson and Adams St Pierre (2007) who found writing to be, in and of itself, a method of inquiry:

> *"During the past decade, however, rather than suppressing their voices, qualitative writers have been honing their writing skills. Learning to write in new ways does not take away one's traditional writing skills any more than learning a second language reduces one fluidity in one's first language. Rather, all kinds of qualitative writing have flourished." (Richardson and Adams St Pierre, 2007, p. 960)*

What came naturally to me was to write dialogue. To the extent that I considered, and initially attempted, writing large portions of the thesis as a play script with multiple metaphorical characters for the 'academic voice,' 'local voice,' 'researcher voice,' and 'narrative voice'. Abandoning over-complexity for something more straightforward, the mangrove conversations that eventually made it onto the pages of this thesis are constructed dialogues between myself and the people I had the opportunity to share time with in St Lucia, Mauritius and Fiji.

I have therefore come to my own form of narrative inquiry only through doing. It has been a process of trial and error, one which I feel is still in infancy with much more growing to be done. Seeing the presentation of my inquiry as a narrative account consisting of mostly conversations was the only way I could make sense of what I had learned.

Of course, I am not the only one to research or inquire this way through developing conversations out of multiple discussions, immersed in transcripts over multiple months. However, it was only after undertaking this process that I have found other examples of approaches such as Willis's "composite narratives" (Willis, 2018). Rather than being a pre-identified method of analysis and presentation, it was simply the only way I could process and present what I was learning through my inquiry.

Meanwhile, the Dogfish Woman conversation at the end of the thesis is similar to Speedy's (2008a) narrative style of interacting with an imaginary co-researcher as a form of self-interview. The *Sokota* stories are fictionalised and metaphorical accounts that explain my motivation for the story, my orientation to learning through inquiry and an act of giving back. In this way, the whole of the thesis can be considered a "layered text" (Covert and Koro-Ljungberg, 2015; Speedy, 2008b) or "layered account" (Ronai, 1995) with multiple forms of writing, as previously described in the Introduction chapter.

The type of story or narrative writing that have I undertaken and share in the thesis is principally in the form of conversation or dialogue. The crafting involved in this style of analytical writing has been driven by a multiplicity perspective and about bringing together the different voices and opinions. This has been in lieu of deep character development or making the scene come to life.

Writing conversations or dialogues allows a number of important things to occur. First, it permits the bringing together in one place - an imagined mangrove forest - the individuals who expressed resonant ideas. Pursuing this became a qualitative form of theme identification. By bringing together the voices of different participants into one imagined conversation, their agreements could shine through. Equally, writing conversation was a way that their differences of opinion could ring out. By constructing conversation using their spoken words, their rhizomatic disagreements and incommensurabilities could be brought forth.

I have brought together a multiplicity of views within the mangrove forest and in this way have attempted construct *talanoas* between people who probably haven't met in waking life. Within this, I have also been able to pose new critical questions and raise the unanswered concerns I identified during the process of analysing through writing. Piecing together the conversations became my process for listening again and again to the mangrove and to learn what it said, collectively.

To summarise, what I've done is to inquire, listen while conversing, then write in order to understand what has been shared and what I've learned. This was done within a wider framework of mapping and tracing with the intention of looking for multiplicity, or at least something different from the black and white and often prescriptive approach of the IDC that aims to do things similarly, quickly, and measurably. I've led with the conviction to take difference seriously, with the guiding belief that as outsiders we can't possibly know more than insiders and with the belief that "another knowledge is possible" (Santos, 2008). I am convinced of this, and that it necessarily combines the past knowledge and wisdom with new knowings and learnings. We are always learning, exploring new ways of understanding, coming to terms with new ways of articulating, yes sometimes measuring, but hopefully with a balanced approach. Bringing together different knowings has been a basis of my inquiry, and using conversation as a method of analysis and presentation has become my approach to accomplishing this aim.

Reading the Mangrove Conversations

Within the mangrove conversations are multiple unnamed voices. This kind of masking is intentional. Writing through the voice of the mangrove forest is a deliberate move towards providing some element of confidentiality for the research participants. This issue is of importance when conducting research in small states or communities, as discussed above, particularly in small state settings where people are otherwise quite easily identifiable. While the research topic itself is not contentious or controversial there are instances where individuals speak out against or critique government or IDC practices. I made a conscious decision to act as ethically as possible to protect identities in these

cases, and one way of doing this has been through the narrative components and using the mangrove voice to stand for local contributions, and to speak with a somewhat unified voice within each story.

The mangrove voice therefore intentionally blends multiple contributions and perspectives into one or a couple of mangrove trees in each conversation. Two of the mangrove conversations blend voices from all three island nations, and this is clearly indicated on the conversation cover explanations, but in the remaining conversations, the Fiji stories are from Fiji participants, the Mauritius mangrove speaks for Mauritius participants and likewise for St Lucia.

Not all the points of analysis that are to be made can come directly into the conversation, without adding too much complexity. This is why, following some mangrove conversations, I provide further critical commentary to draw out additional nuances about what has been shared in narrative form.

Where participant quotes are taken verbatim, these are found in quotation marks within the mangrove's dialogue. Otherwise, quotation marks are not used for the mangrove voice itself. Sometimes, more than one mangrove talks but this is for stylistic purposes to show the multiplicity of perspectives and to convey a wider conversation. I do not attempt to strictly distinguish between the particular mangrove trees within each mangrove forest by giving them distinct characters and it is up to the reader to determine, if they wish to do so, how many mangrove trees are actually speaking. During the fieldwork, I intentionally sought the perspectives of a wide range of participants, from community leaders and members, climate change activists, teachers, business owners, drivers, writers, researchers, artists, IDC workers and government officials. In most cases, these voices are blended together into the mangrove voice, and individual participant roles are seldom mentioned. In most cases, I have not found it necessary to single out each voice by denoting their occupation or community role, in part because, as is the nature of small or island living, every individual occupies multiple roles within a community. A business owner may simultaneously be a community leader and/or work for the government. A university lecturer may also lead an NGO, and therefore, applying these labels seems at times arbitrary or even misleading. Except in some cases of direct quotation, where it is relevant to the particular point being made, mention of an individual participant's community role is seldom made within the mangrove conversations. What this gives us, then, is a set of stories that is commensurate with the driving theoretical construct of multiplicity, while aiming to honour an ethical stance on confidentiality, albeit in an otherwise non-traditional and perhaps at times even somewhat disorientating dialogue constructed from the lived experiences of many participants from an island nation.

4. Pressing Environmental Concerns in Fiji, Mauritius and St Lucia

'Maybe the Earth is now tired.'

Back on the shores of the island where the Tree of Resilience has been planted, I have concluded an initial conversation with Dogfish Woman and returned to conversation with the Mangrove forest. Having discussed with Dogfish Woman that all the resilience tracings have been blown away in the tropical storm, I recognise the opportunity at hand – that rather than produce another re-tracing, we have the chance to develop a new mapping of responses to environmental change. What seems important to establish first are the concerns that the Mangroves have about the environmental changes around them.

The following narrative piece of analysis therefore explores the findings of the project's first primary question about the pressing environmental concerns in St Lucia, Mauritius and Fiji. This is the first mangrove conversation and includes all three countries. Quotes come directly from participants from ***Fiji,*** ***Mauritius,*** *and* ***St Lucia****. Through this mangrove conversation, some contextual understanding of the three countries is provided. Geographical place names have been omitted or generalised to help maintain confidentiality of participants.*

The expressed areas of concern range widely, and while artificial to the conversation, topical headings are inserted into the conversation to help delineate while reading. Discussion is had concerning the anthropocentric nature of some environmental changes and the amount of, or lack of, control over them. After the mangroves have shared their concerns, the conversation turns to my analytical commentary and summary.

So, Mangroves of Fiji, St Lucia and Mauritius, the Dogfish Woman has said that all the leaves of the Resilience Tree have been blown away in the storm. Rather than create a reproduction of what was, I wonder if this is not an opportunity to consult and to develop a new map of responses to environmental change. You come from three very different Island Nations. Can you explain what you see as the pressing environmental concerns on your islands today?

Weather and climate variability

'For me, it's the weather, how it switches and changes really quickly.'

Is that's unusual for Fiji?

'It will be raining for like two days and all of the sudden it's just hot after that, and then it will switch back, like all in a week. Or even in a day you can have a rainy morning and a sunny, hot afternoon. The weather is very cold, up in my area, it never gets really warm. Even now, when you are expecting hot weather, warm weather, people are still feeling the chilly night of what they used to, say two months ago. Chilly nights are still visiting them.'

And how does this concern you?

'The pattern used to be very clear and regular. Now we've lost that pattern. We could have a cold night in the middle of a hot weather. Really chilly night. Somehow it has lost the pattern and it's affected, in rural areas, it's affected how we prepare our lives. We used to plant in a certain season and expect it to bear at a certain season, but somehow it matures early, or matures late. That's disorientated the communal patterns of living. Whereas we could be happy collecting, but somehow, say foods, fruit crops, to some extent it's ceased to be what we used to expect. Crops not really bearing what we expected. The fruit trees. They bear a bit early or they come a bit late. And they're not heavy as they used to be.'

Does this resonate with the experience in Mauritius?

'Fruit trees because fruits are adapted to certain season of the year. Now, in the cold locales we never used to get fruits of a quality now we are reaping – say for example lychees – in one of the higher elevation areas of the centre of the island, we said it's impossible because it's a cold area. We brought people, we showed them the lychee plants and the trees, the fruits, etc. So, then we explain to people that these could be an impact of climate change.'

And what about in St Lucia?

'Especially the weather pattern, the amount of rainfall, temperature of the sand, longer dry spells, I've seen that. We've been getting a lot of sun, more sun, what we have realised we getting - when we get

rain, we get only one big portion, for one month and a couple of months of rain then there is no more rain. So, we've been seeing that more. Climate change is real.'

'I don't know much about climate change, it's not something that I've read much about, but I don't know the patterns in the past are they similar to what we're experiencing now and so our forefathers would have adjusted, but it would have taken them some time, you know, with human nature, you only change when you lose it. What I have seen is the change in seasons. Change in temperature, the change in rain patterns, which has a lot to do with rural farming. It has a lot of effect on rural living. So, yams not coming up at the same time that they used to.'

'There are some crops that, you know, send out random flowers throughout the year, whereas before we had a guaranteed rainy season and then a dry season, now that's also not as it used to be previously and it's affected the seasonality of the different crops.'

'And then, of course because we're an agricultural country, any shift in climate or weather is going to affect us and also when we have heavy rains in the summer months when we have heavy rains it lasted a long time this year, for example, so it affects our vegetable crops and the prices go up.'

So, from what you're saying, I understand that this issue of weather and climate variability - and its impact on rural life and agriculture - is a pretty big area of concern, especially for Fiji and St Lucia, but it's less so for Mauritius. What is one of the biggest pressing environmental concerns there on your island in the Indian Ocean?

Waste disposal

'In Mauritius they'll say it's waste management and litter, which is more behavioural side.'

Yes, that's a very different issue from the shifting climate patterns, because it's something that people can have greater control over. Where's it all coming from?

'All the imports that are coming in. Disposal is a huge challenge. There's a lot of littering in the beaches and things like that. A lot of imports are coming in that have a lot of packaging. People are just buying things from paper to electronics, everything across the board. You don't have proper channels for what happens to it after. Nobody's taking responsibility for that. The companies that are manufacturing or importing the stuff in.'

'On the river, people just litter indiscriminately. Like the marshy area, an entire refrigerator will be there. Or they throw their pampers into the river or certain things.'

'Well, I think number one is cleaning up some of our habits. We're still very – shall I make up a word here – plasticised – something like that. And you see this on the sides of the road, you still see people throwing trash in the waterways which end up in the sea.'

'You have parents that are still throwing bottles and waste around the corner out of the car when they're driving.'

'Even our students don't want to do the environmental clean-up anymore because they realise that they can get 15-20 bags full of bottles and we haven't even done a whole area of the beach and we have so many bottles. If we go to this end of the island, all the water just, in one end, we have so many bottles and we cannot do anything with them. There was a gentleman who was collecting bottles to recycle, but I think that's stopped also. Somebody was contacting schools to collect bottles. They began collecting bottles, but nobody ended up collecting from the schools, so we had to send it to the landfill.'

Is this simply a matter of individual action and responsibility, or is there concern beyond the need for education and getting people to change their consumption and disposal patterns?

'There is a government, although they say they're putting in taxes and regulations in place but it's just all ending up in the landfills.'

'At the pinnacle I will put poor enforcement of our laws and regulations. A classic example is the returnable containers act, something that has been in draft since 2000, I think. But because of pressure from the business sector, the government has not yet enacted the regulation that will require all plastic containers to be returned to their place of purchase.'

Is there anything in particular about your islands that makes littering and waste management especially difficult - perhaps more challenging because of island features?

'Waste management is a big issue, especially in island countries. They have limited resources - so landfills – you can't just have landfills anywhere. So, do you go for incineration, do you go for landfills, for composting? So, all of these are being tried in Mauritius.'

'The space, in terms of size, it's not such a big island.'

Yes, true, while each of your three nations have large maritime borders, as island nations you have a range of limited land space. You often get labelled as Small Island States, but I've also heard some of you refer to yourselves as Large Ocean States. In terms of land mass, your three nations are quite broad-ranging. While St Lucia is a one-island nation, Mauritius has some outlying territories and Fiji has over 300 islands. In terms of land size, St Lucia is 616 square km, the land area of Mauritius is

2,040 square km, while Fiji's two largest and most populated islands of Viti Levu and Vanua Levu are 10,388 square km and 5,587 square km respectively. In Fiji, with around 110 inhabited islands, deploying any nationally-coordinated effort for waste management or recycling is even more complex!

Maps of St Lucia and Mauritius. Sources: Encyclopaedia Britannica and WikiMedia Commons, respectively L to R

'Our energy right now is going towards waste management, having waste facilities in place, we do have landfill, just the first landfill within the region, so we continue to face challenges in running, managing this, getting both the management and regulatory roles, it's quite tough.'

'We only have one landfill and it is constantly increasing the size because there is no place. The land which was our first is now a big mountain. Whoever it is had to move and relocate some people which lived nearby and it caused a lot of environmental problem, a lot of leaching. Now there are some NGOs and we are introducing the concept of recycling. So now it's becoming an issue that is everyone is concerned about, but before that, there was nothing done.'

And does the waste management have other knock-on effects that concern you, beyond having the space to dispose of waste, implementing recycling schemes and changing the habits of people?

Flooding

'You ask what one of the hugest issues is in Mauritius? Some years ago we were having floods which is connected to the waste pollution.'

'We had the floods in 2013. Eleven people were killed in the flash flooding.'

'The biggest problem is that there's a lot of waste. First, there were no passageways for the water to go. Those are constantly being plugged by waste.'

'So, when it rains - the harbour - we have about a million bottles floating in the harbour, drains get clogged up, rivers get clogged up.'

'The flooding seems to be put down more to infrastructure and not adequate drainage with the roads, they haven't put the right sort of pipes for the drainage. That seems to be what is talked about a lot.'

'But of course, the government is blaming climate change, but it's not only climate change, it's also because of the drains and all of that.'

And are there other factors associated with flooding, in addition to the waste contributing to its likelihood?

'I think the problem with flash floods presently. I think when we have rainfall we have a lot of water that comes into the cities initially. There is not much place for the water.'

And when you speak about flooding, it's not from tidal surges like those that affect sand bar formation islands like Tuvalu. All three of your island nations are very mountainous, having been formed from volcanic activity - of course that's important to remember. So, when there is a quick inundation of heavy rain, the water is travelling from the upper watershed into the cities and towns which are on the low-lying coasts, and where most of the population lives.[4]

'The river, when it comes down, it's a very chilling thing to see how you become so dwarfed in that big thing of water. You feel so helpless – so much water just coming, pushing, it actually took a few houses down to the sea when it actually came in. This whole thing is the river plane actually, but it's more or less, when it floods, the entire community – the river comes through, you know? The entire place, yeah. That's what happened during Tomas, it actually went straight through.'

St Lucia 'Christmas Trough' Source: https://www.stlucianewsonline.com/trough-system-versus-hurricane-tomas-which-was-worst/

Yes, Tomas was of course in 2010. And then you also had a major storm event with serious flooding in December 2013, what you call the Christmas Trough.

'My particular village, somebody outside, there was a knocking at the door. He opened, and like this – WATER – and the man said, hey, there's a flood! There was no rain here, the rain was up there.'

[4] While coastal population numbers are difficult to ascertain as a proportion of overall population, the total populations within the three island nations are: Fiji 884,887 (2017 Census data (Fiji Bureau of Statistics, 2018)), Mauritius 1,222,217 (2017 estimated resident population (Statistics Mauritius, 2018)), St Lucia 177,301 (2017 estimate (Central Statistical Office of Saint Lucia, 2018)).

Oh, in the upper watershed! You mean, it hadn't been raining in the village itself, so you had no warning, except this man coming to tell you, and you didn't know it was flooding until you opened the door to him?

'It was a sudden downpour and the drainage was not enough to drain that large volume of water, so it overfloods the bank. All the villages washed away.'

You have some rather extreme topography to deal with! We're talking about steep inclines where the water tunnels down, either in rivers, or as runoff.

'Yeah, and we respond to a lot of families that are affected by that [flooding]. Because it's like a delta down there. And the communities that we work with are in the lowest points in the delta. We do relocation of communities because of flooding.'

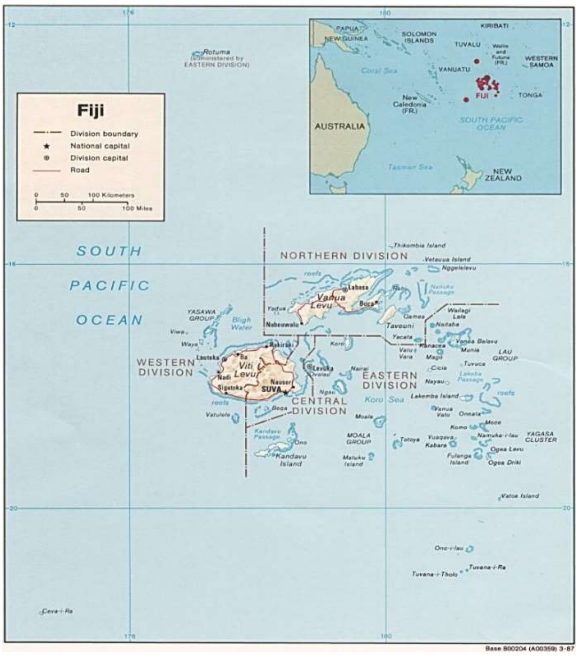
You've been mentioning flash floods in particular. Is this a difference in the rainfall that is new? Maybe linked to what you were saying earlier about changing weather and climate patterns, which could have a role to play here?

Rain pattern changes

'I think it was during the first term that we had some flash floods with heavy, heavy rain. So, it's unpredictable. Yes, we have this torrential rain.'

'The change in the rainfall pattern. If you look at our annual rainfall it's about the same. The annual rainfall is about the same BUT it's how it falls. Instead of falling over a period of time, you have a few days of heavy, intense rain, so at the end of the year, it adds up and it looks like, if you're looking at the average its's like, ah, your rainfall hasn't changed, but the way it falls, it has made a difference.'

'Yeah, the [previous] pattern is the rainfall and it sinks in and it goes. Now, so much downpour! We're surprised that the flood is there. There's no time to prepare for the flood, particularly if it comes at night. It's so fast, so fast. Like in [place name withheld], we'd be sitting here and the flood rises, it's too much even for you to put your furniture up high. It's too late, it happens so fast. We never used to have floods like that, really big floods. The heavy floods that reach a level that we never saw before. Because of the silting, the sudden downpour and there's not much water sinking into the earth.'



Map of Fiji

Source: https://www.populationdata.net/cartes/fidji/

You've mentioned that there's not much warning with the flash floods. Why is that the case?

'They say that there's going to be a torrential rainfall, but they don't know where it's going to be in Mauritius. Because it is a very small island, it can be in [place name withheld] area, or anywhere.'

So, lack of predictability makes preparation difficult, and flash flooding has resulted in loss of life in some cases. This is adding up to be a pretty complicated picture with lots of components! Are there other concerns linked to flooding events?

'With the intense rainfall we have massive landslides.

'We had a few landslides as much as 200 feet wide and 100 feet long.'

'That has affected so many things from farmers being impacted with losing their crops, losing their land through all these landslides, the bird's habitats they're losing all their trees where they were having their nests.'

Is it principally the rainfall changes that cause the landslides? Or are there other factors involved?

'Some of the farmers, they farm right up to the ridge. You understand? They farm up to the ridge, then we get heavy rainfall and then we get slides. It in the forests, as I've been walking through, I've seen several slip slides. Where all the soil just went off and it's just a sheer cliff piece – a sheer wall piece –

rock, bare rock, so all the soil just slid down. So, it's more from the intense period of heavy downpour in a short space of time that the land cannot absorb.'

'There are some places in the rainforest that don't get as much rainfall as they used to, and then managing fallen trees, and also the direction in which the trees grow. Some places instead of having 10, 20 feet between massive trees, we have a cluster of 40 or 50 seedlings, and when you think they're all competing to get to the canopy, so they don't have very grounded roots. They're tall, very small and then when we get high winds and high rainfall, they all contribute to future landslides because they're swaying back and forth, destabilizing the ground.'

Coming back a bit to the changes in the rainfall pattern are you noticing - So far, you've mentioned that you're getting short sharp bursts of rainfall in heavier, intense quantities, and that this is one of the reasons for the flash flooding and the landslides. But this isn't something that happens year-round, perhaps. Is there still a dry season?

Drought

'In Mauritius, they've also seen a change in the patterns of rainfall and they are having more drought periods becoming longer – we'll say the dry period is becoming longer – instead of the drought – we'll say the dry period. They are having very intense rainfall scattered over a certain period of time, which is not the usual pattern they are used to having.'

'We're used to dry seasons, and yeah, the seasons are becoming more severe, but we have learnt that at a time of year we're suffering without water, it's hot, the ground is dry, our agriculture is suffering.'

In St Lucia, do you consider this to be a drought? In Mauritius, it's not classed as that severe.

'We are in the middle of a drought situation in St Lucia.'

'Drought in a rainy season.'

'We've never had a situation where it was this serious before. Not necessarily with the drought, but the effects of the drought.'

Is this something new for St Lucia? What impact is it having?

'We weren't having droughts for a long time, we didn't know what a drought was. In 2010 we had a very serious one – I think this one is worse than that one.'

'We've lost a considerable amount of our crops because of the drought. You don't get the intermittent showers that you used to, like between March and May we had three showers, maybe, that lasted

about 2 minutes each. Our crops cannot survive on that. Usually [in the past] you get one or two scattered showers a week – that they can do.'

Is it expected to continue on this trend?

'The trajectory of events suggests that, if drought conditions continue to prevail, and, if category 4 and 5 hurricanes become the order of the day…'

'In 2010, we went from a drought to the most devastating hurricane to ever hit here before and when you go from a drought directly to a hurricane, what happens is everything ends up flooding.'

That's a lot to be concerned about in your three countries! A lot of this is completely outside human control. Arguably, some of the climate change patterns you are experiencing are ultimately because of past human activity, particularly since the industrial revolution – anthropocentric, or "human-induced changes" [5] as we refer to them now – but the effects, like changes in climate patterns, are not controllable today. In some respects, you're at the mercy of the skies. With exception of the pollution issues contributing to the flooding, so far what you're describing are concerns that people have been forced to identify ways of responding and adapting to changes over which they have little ability to influence.

Are there other types of environmental concerns that people in your countries are expressing which are more immediately human-linked or human-induced? These would have the potential to be addressed through changes in human behaviour.

Deforestation

'Land management, with deforestation being a major aspect.'

'Loss of important forest areas. Not just their loss but the degradation of the existing, so they may be there, but what's within it, yeah, so that's forest degradation.'

How is it being lost or degraded?

'You have persons going into the forest and clearing off spots just to plant crops. And they don't replant [trees].'

'With time people have removed the forest and used the wood for fuel.'

[5] Lewis and Maslin (2015) demonstrate how global human activity, "is the dominant cause of most contemporary environmental change" which is likely to be observable for millions of years within the geological stratigraphic record and is often argued to have started with the Industrial Revolution.

'We've had a lot of changes with the construction of ring roads and which are the motorway. Especially they cut down the trees in the mountain.'

Oh, so whereas some of the flooding can be accounted for by virtue of the human pollution combined with the change in rainfall pattern, this human activity of deforestation is also contributing to the flooding?

'Yes, plantations. And the native forests, they don't have any plan to log responsibly to avoid the erosion or surface water, they just cut in any direction just to get the logs out. And particularly in the highlands, all the erosion is really bad.'

'In some areas, like [place name withheld], Fiji Pine has acquired a lot of land. Still native lease, but they've acquired the leases and that creates some flash flooding, siltation, riverbed levels rise…'

So, this human activity of tree cutting – sometimes on the scale of deforestation – is causing siltation and general breakdown of the soil and while some of it goes into drainage systems much of it goes into the rivers?

Siltation

'When the soil is exposed siltation takes place. Also, the land slippage will bring the soil down, cause siltation and fill up the river.'

'Around the area where you are, and I talk here, of course this is the sugarcane belt. There's a lot of ploughing and breaking up the soil and this of course easily gets flushed into the rivers.'

No wonder so much flooding is occurring – this is a truly multi-factor and complex issue.

'The level of silt has raised, the rivers have shallowed out. In one community in the west, it's the same height of the road, there's no depth to the river, and any heavy rainfall is going to flood the community.'

'Inland, the creeks the rivers are drying up. Whereas you used to go by raft, you can't. You have to drag the raft. We still use it to carry our cargoes, but we have to drag the raft. Because of the silt, the rivers are silting. There's so much heavy downpour and so much excessive water – the rate of erosion is outweighing the volume of area that the creek should do the transportation of the silt and they're silting up. There's not more pool in any creek. Whereas we HAD a big pool, we can swim, now no.'

Does the siltation affect more than just the rivers and contribute to flooding? Does it have other effects that people are concerned about?

Coral impacts

'So, deforestation has effected the marine environment. It's both runoff as a result of deforestation, but indiscriminate cutting down of trees near river banks, etc., have really impacted our marine environment seriously.'

'What happened was that with lots of landslides and stuff that silt came through the river and it went into the waterfront. The other thing it did as well, it choked up all the coral reef as well, so what we used to know is no longer there. They are starting to grow back, but the water, the stability of the waste is actually not allowing the growth to happen as it should. There is nothing really to snorkel or dive and to see there.'

'There are some reefs in St Lucia that we don't take guests to anymore. They have died because of all the siltation, so it affects the increase in nutrients, you have an algae bloom.'

'We need to be more mindful about reforestation to address pollution and silt runoff and smothering of corals.'

Is this a worry in other countries as well – these concerns about the coral?

'For Mauritius, what I see is mainly on the sea. It's degradation of all the coastal zone. You have degradation of the coral reefs, and because it's at the base of the whole ecosystem, there are no more fish. It's due to the coastal development, the pollution, the bad practices as well.'

'Coral reefs are being destroyed en masse due to heat increase of course, which is worldwide, but also due to pollution because we have seaweeds invading the corals. The seaweeds don't come from the heat increase, they come from the pollution. Over the course of 20-25 years, why corals are becoming grey like this? Because the seaweed's all over. There are in some places – inside the lagoon, I mean. Well, in other places – gone – the band of coral is gone – completely. Just small pieces. In this short space of time. No more exists and living coral's very scarce now in this region. So, we have some places where you have living corals still but most of the corals have become brown with the seaweed over, which is going to be dead completely in a few years.'

'People have worked and found coral bleaching, a lot of nitrification. The water quality of the estuaries - we saw quite a lot of pollution in there, especially these nitrates. There is that element of nitrate and phosphate going into the lagoon. There has been coral bleaching but we have to be careful with the coral destruction because at the time people are not so conscious. They were just breaking the coral just to move it into the deep sea and were sometimes using dynamite. If you see an aerial photograph of Mauritius with coral fringing, you would see a lot of areas where the corals are discontinued. Some of these are natural, some have been manmade.'

Okay, so it sounds like a lot of the coral concerns link back to human activity and changes, on the land, yeah? As you pointed out, we know that coral bleaching around the globe is on the rise, caused principally by raising water temperatures and water acidification [6], but this is something else that you are describing here.

Land development

'The land degradation, I would say improper land use, is also a major issue. I say land misuse in the sense that, for example, we have a lot of developments taking place that are not properly planned and having an impact on the land.'

What kind of development? Small-scale private projects, or industrial-scale works?

'It's mainly infrastructure development, eroding, jetties, coastal areas are largely impacted by this. Mangrove reclamation is also an impact of all this, so have very much focused on the deteriorating state of our mangroves right now.'

'Covering and backfilling the ponds just to build new houses.'

'If I can just give an example, when we talk developing, we talk about construction and so on, we are doing it at a fast pace, so I think we should not devalue Mauritius specifically. I mean, the mature trees we are using and so on. What we are doing, we are drying out the wetland and building up on it and Mauritius being an island, we rely a lot on those beaches, which we are just building on it. Tourists come to Mauritius for these beaches, and these beaches rely much more on these wetlands, so they are interconnected. At some time, we are going to lack from something.'

'We have recently constructed lots. We have a beach in the north. They are planning to build something there, but the local community is against it because those wetlands are precious.'

So, some of the development is for personal home construction, but much of it is for tourism and vacation homes?

'While you're driving along the roadside, you can see there's a hotel there. It's abandoned. And a massive area was cleared, apart from the hotel rooms and so on. But a quarter of mile from there they were supposed to build golf courses, and the government pledged a large area of land, not government, probably the developer. And the area was cleared bare, and you found a lot of siltation.

[6] In their article in *Science*, Hoegh-Guldberg et al (2007) demonstrate how the rise of atmospheric carbon dioxide concentration and global temperature rise will result in a decrease of coral on reef systems, with recent decades having seen mass coral bleaching events.

That is one of the few areas where you get a seagrass bed in this area, just along that empty coast there.'

But isn't there a process for getting approval from the government to do this type of development, and that includes an Environmental Impact Assessment, does it not? What you're saying is that in part because of the siltation from this land-clearing, it has resulted in a seagrass bloom. That might have been taken into account or foreseen with an impact assessment, no?

'Yes, I suppose there was an EIA (environmental impact assessment), but the EIA is not merely to start development, it's merely to put things into place, you understand?'

'There isn't any type of enforcement of building standards. There's too much clearing of land for construction and waste management.'

'You also have a lot of unplanned development in the area. In general, that's how it is. On agriculture land and stuff, other persons have activities, like you may find like garages placed where somebody's farming and stuff.'

Oh, so some of the development issues are smaller-scale, not all of it is for tourism, sure.

'As far as development, we thought, okay if we can build up our agriculture industry, it would help us in the development process, and what ended up happening is we cut our big trees to do that, we cleared land to do that, instead of thinking that we leave the big trees as part of maintaining the soil, as part of getting water in there and put these incredible irrigation systems together which are dependent on us getting rain.'

'There is too much unregulated development, there is too much development close to the coast line, and with the prospect that predicted projections for sea level rise and climate change related impact, it's most undesirable.'

'Like for example from here, maybe due to investment coming up, people tend to cut down the trees and do some grading works and stuff. And there's any waves, like coastal flooding of course, because they're doing grading works and stuff. They bring…it's not a bulldozer…'

Oh, okay, some kind of tractor with like a rake? A special rake?

'Yes, they use. They're trying to level the land near the beach, so when this big waves coming, it goes right on top. At the [name removed] Resort, they've been experiencing it. So, water comes right inside the hotel premises and that's due to, apparently, due to development really coming up in that premises. So, there's a lot of changes coming around these areas.'

Oh, yes, you mention water level rise – the infringement of water levels onto properties that maybe haven't experienced this before. This seems to be one of the first things that comes to mind to non-islanders when you mention climate change and islands. They immediately think of sea level rise. So, it's interesting that it hasn't come up yet as one of your more pressing environmental concerns.

Sea level rise

'So, with regards to sea level rise, very few communities experiencing that because of, you call it geology. A lot of Fiji rises straight up out of the ocean. There's not a lot of flat, like Kiribati.'

Fieldwork photos of mountainous landscapes in Mauritius, St Lucia and Fiji, respectively (left to right)

But it's not a non-Issue, is it? It is still affecting the people, presumably?

'There are concerns about sea level rise.'

'But of course, there's the thing on climate change - villages having to move because of the coastline receding. You're getting more water coming up, trees are falling over, and that's an exercise which the government has and villages which are programmed to move.'

'Fiji currently has about 45 villages that need to be relocated, so that becomes a huge burden on our resources in terms of how do we relocate them, where do we move them, the funds and issues of land, who owns the land where we move. So, it's a very complex issue and it takes a lot of time and investment of resources to do that. Sea level rise is obviously one impact because most of our population live around the coastal areas of the island, two main islands. So that means that majority of the population concerning about that.'

So, the concern is mostly to do with relocating people, and that seems a possible adaptation?

'We do not build too close to the coast anymore. The community has a greater adaptation if we see it can tolerate sea level rise because we now are building further back.'

'The impact is not so noticeable unless you know what it used to look like before.'

In that case, what do you hear the elders saying about sea level rise?

'They notice the change from before and after. So, they've said that, yep, there's a rise in sea level, they've noticed that. They believe that it just happens. The rising of sea level is just prone to happen and that it will go away again. So, they really don't want to move out, so that's a big problem. Unless, if like government has some sort of authority to try and get them to move out. Past generations, this happens and it's normal.'

'My Grandmother is 95 and she was telling me that there's this beach in her town. There was 10 rows of coconut trees there when she was growing up. Now, there's only one row left. When I was a child, I knew three rows of coconut trees and those three rows, there was a storm that went in a reverse direction, and that's Lenny. Lenny took out two rows of coconut trees. There's a stone, there's huge boulder that persons when they would go they would use it as a changing room, they would just stand behind this boulder, and that stone is smack dab in the middle of the sea now.'

So, community elders are good people to speak to about sea level rise?

'We went along the beach to show them because, you know, you have old people in the village. We asked them where was that beach previously and then they start showing that it was about 10-15 metres into the lagoon, but it has been eroded with time and now it's here.'

'I know that some villages the sea is coming in and wiping out their coastline, eroding the coastline. That's a cause for great concern.'

Right, so in some ways, the issues of sea level rise and coastal erosion get lumped together in the public understanding?

Coastal erosion

'What we do know is what we see in terms of the patterns and the changes in patterns. If we look at Mauritius for instance, they have seen the consequences of what is happening. They have a lot of issues related to coastal erosion. And this is linked, based on the information that they have, it is linked to the rising sea level, so this is one of the changes that Mauritius is seeing.'

‘What is of real concern, I think to most of us, is the level of sea erosion, the level of beach erosion. Our beaches are disappearing and rapidly so. Whether it’s because of nature or anthropogenic forces, or a combination. Maybe the Earth is now tired. I don’t know, but there is certainly an alarming rate of coastal degradation in this country.’

Beach Erosion and Seaweed, St Lucia, fieldwork photograph

‘Right there, right along this coast, the North East part of it, at the back of the road going up to the airport fence going up to coconut bay, you can see what is happening. So, yes, that is an area and I can assure you one or two buildings are disappearing, are broken down, taken away by the waves, and also plants that have disappeared higher up at the point where the beach continues up, to the point of it. That area has also been badly degraded by wave action, sea level rise, something, so we are seeing some of our natural coastal defences being put under extreme pressure.’

‘And then the erosion that is taking place along the coast in Mauritius. In one of these studies you will see that we may be losing kilometre squares of beach.’

So, what causes the beach erosion?

‘Waves, cyclones’

And, this can be understood as a phenomenon separate from seal level rise?

‘Yes, a separate phenomenon.’

‘But beach erosion as well is a big concern as something that’s really visible to people. The beaches that they spend a lot of time socialising are changing, they can’t go to the same places as they were before.’

Is it only the waves and cyclones that contribute to the coastal degradation?

‘There are a lot of legal accounts and cases of people who have legally taken sands from beaches and there has been erosion so that the beaches have continuously been decreasing.’

‘They use it for construction.’

‘It’s been some time since there has been a law preventing people from using sand for construction but even with that, the states lease the land, beaches and so on, not only for hotels, but to individuals and they have the lease for 9 years, but they do whatever they want. They don’t have the right to

bring machinery on the beach, but they will try to avoid the peak hours when there aren't a lot of people on the beach.'

Commentary on environmental concerns

Based on what you've shared so far, some things have really surprised me.

The first is your:

Wide-ranging and complex articulation of 'environment' and 'environmental concerns'

The way you have interpreted 'environmental concerns' has ranged very widely from issues of weather pattern changes to waste management or littering, and from concerns related to flooding to those of development.

This was surprising to me at first, because I initially had thought to focus on the environmental concerns which were more closely linked to climate-change. However, you very quickly drew a more sophisticated and complex picture.

Some might think that some of these are not informed understandings of environmental change. At times, researchers become frustrated or concerned that the public understanding of climate change is misinformed, that people's conceptions of environmental change are disorderly because they are confused between 'climate change', 'global warming,' 'weather,' 'environment,' and simple 'surroundings'.

'When you speak to people about the environment, they will start thinking about all the waste that there is. For them, environment means waste – waste disposal, waste management. It's still better, but you want to go much, much better than this.'

'They think that environment is only about trees, but when you're in the programme you can see that the environment is not only trees, it means caring for each and every thing.'

However, I see your wide-ranging expression of environmental concerns as a valuable articulation of the complexity of the issue, rather than being a deficit of understanding the differences between these concepts. And I think one reason for this wide understanding of 'environmental issues' comes down to the very interlinkage between naturally-occurring and anthropocentric forces which are causing changes and resulting in concerns.

In other words, some of your environmental concerns are about things which, at first glance, seem to be climate change related, however, when you look deeper, these are exacerbated by human activity. It is this very interplay between these forces which makes your environmental concerns so strong, if not challenging to address. There are examples of this in each of your nations.

Your concerns with flooding are a good example of this. In Mauritius, for instance, flooding occurs as a result of a combination of factors. Weather patterns have changed, namely heavy downpours which are difficult to predict. This is mixed with blockage of the drainage system, which comes from public littering and the siltation related to development and building activities.

'Like, they were cutting down trees to build new roads. Gosh, yes, I have an apartment in the north and it was beautiful road, small road and I bought it with beautiful flame trees and they cut it down to enlarge the road.'

Enter, additionally, the concerns you raise about the wrong kind of drains being installed in the first place, and even where there are regulations for proper planning, they are not always followed.

'There's another license, EIA Environmental Impact Assessment.'

'In that sense we do have laws, but do we really abide the laws?'

This is not just an issue expressed within Mauritius. St Lucia also mentioned that the EIA process is not protecting environmental degradation as much as it should.

Fiji, has articulated that rainfall patterns are also changing with heavier downpours, but so are instances of human logging activity. This silts the riverbeds, thereby affecting the natural drainage system, which becomes overwhelmed.

'You can do little to mitigate water falling out of the sky or not, but upstream all these rivers, erosion, deforestation…We also have a dam at the top for water. And they have to release water when the dam gets full, as a safety measure, because there's also a village at the bottom. The town will just go down. In 2012 it was overnight. And that could also relate to the fact that the dam safety chute was open to that water, so you know, that has to happen because the dam has to release excess.'

So, yes, another human infrastructure and decision-making aspect that, when coupled with changes in naturally-occurring weather patterns, leads to flooding.

Similarly, St Lucia has explained that the weather pattern is changing, whereby they are experiencing drought conditions, coupled with siltation induced by farming practices, particularly in the upper watershed. This leads to siltation of the natural drainage system, yet an added factor here, as you have explained, has been the occurrence of hurricanes after drought, whereby the ground is already weakened and over-dry, and unable to absorb the heavy rainfall with the result of damaging landslides.

These examples present a very complex web of climate change, public responsibility, governmental planning and pressures for economic development all leading to flooding and other events that have resulted in loss of property and of life.

The second surprise was:

An unexpected focus of concern

You seem less concerned with some of the more obvious environmental issues for islands - the ones that outsiders often perceive as most urgent. When I discuss my research with non-islanders and tell them that I investigate environmental change and resilience in islands, they mention sea level rise and hurricanes or cyclones. Yet, in your articulation of your environmental concerns, these things come up less often than I had anticipated. I found this really curious at first.

It's not to say that these issues are not concerns, because they do present serious practical problems – crises even – and cause uneasiness for people. And, it is of course important to bear in mind that sea-level rise is not uniform across the planet and neither are Fiji, Mauritius nor St Lucia low-lying islands that will be inundated by even the smallest increase in sea level, like the coral atolls of Kiribati and low-lying nations like the Maldives.

Two things occur to me that help me to understand my initial surprise about this. First, when it comes to tropical storms and cyclones, islanders have dealt with this force for generations. They are a fact of life for you. There is a wealth of multi-generational know-how and a collective memory of recovery from tropical storms and cyclones. Perhaps this provides a level of confidence that recovery is possible, and therefore it is not a 'concern' in the same way as other environmental issues. In some cases, especially in Fiji, traditional knowledge and practices still informs storm preparation in some places. This would be interesting to hear more about that, so perhaps we can revisit this in conversation later.

And interestingly, it is the very LACK of tropical storms in recent years that presents a concern in Mauritius.

'The fact that we don't have cyclones for a long time, also this is not good. Okay, cyclones aren't good, but we need cyclones because then we have lots of bats, you know? They are also destroying all our fruits because they are not being controlled by cyclones.'

That was indeed a surprise. Beyond the implications for ecosystem balances which you address, the lack of cyclones also has the potential to affect collective memory from experience. Over time, this could potentially make recovery more of a challenge to those who have not lived through severe storm incidents.

Secondly, with respect to both tropical storms and sea level rise, things are visibly being done to address these situations. National plans have been or are being developed for emergency response to natural disasters. For instance, the Pacific region has been a leader in the concept of integrating together disaster risk reduction and climate change adaptation plans [7].

In St Lucia, insurance schemes are becoming explored, piloted and available, for example for farmers and fishermen to assist with financial impacts of extreme weather events.

And loans are becoming available for homeowners to make repairs from past storms and to make improvements to sustain future occurrences.

'We're going to be surveying about 500 vulnerable homes to determine what the actual needs are on the ground. And will be establishing a loan facility with the St Lucia Development Bank. The St Lucia Development Bank will use these funds to provide out low-interest loans for climate change adaption to households and businesses.'

When it comes to sea level rise in Fiji, coordination is visible to relocate communities to higher ground, with, as you say, 45 villages marked for relocation.

'That's an exercise which the government has and villages which are programmed to move. Out in the [place name removed] Islands they're actually moving a school. I think they did say it's going to cost about 3 million dollars to move the school.'

From these examples, what I have come to understand is that there might be less concern because these environmental changes are being systematically addressed and communicated to the public.

Perhaps this surprise – that islanders in Fjii, St Lucia and Mauritius seem to be less concerned with the globally-perceived apprehensions of cyclones and sea level rise than one might anticipate - can be understood as a matter of certainty versus uncertainty. You know that tropical storms are going to happen. You know that sea level rise is happening. These things, to a certain extent, can be planned for. Rather, it is the change of the cyclone season timing, or the severity [8] of the storms that is concerning.

The issues about which you see to be concerned presently are those with a greater degree of uncertainty – those about which you have less collective experience dealing with, or lack of national

[7] (Gero et al., 2011)

[8]Worldwide, cyclones are becoming stronger. In February 2016, Tropical Cyclone Winston was the first Category 5 cyclone in the South Pacific to hit landfall and the second strongest cyclone recorded to hit landfall, worldwide. (NASA Earth Observatory, 2016)

strategies to address. From what you have shared, those are the environmental changes which seem to be, understandably, in the forefront of your mind.

And just briefly, but importantly, one further reflection about what you seem to be expressing as the most concerning environmental problems: These seem to encompass the changes in the environment over which humans have no, or limited control over, and which are additionally affecting livelihoods negatively. In other words:

Areas of environmental change, with limited control but strong effect on livelihoods

The changing climate and weather patterns, while induced by anthropocentric forces, have impacts over which we have no immediate control because they have a trajectory of long-reaching impacts for decades to come [9]. Some of the livelihoods that are being impacted in this way range from farmers to tourism operators and fishermen.

With respect to farming, unlike with the issue of flooding, for which people can make changes to reduce the human-related stresses on the drainage systems, there are no mitigating actions to be taken which can affect when and how little rainfall your islands are receiving, or to regulate the weather pattern on your islands. As you have explained, these changes in growing seasons and reduction in water availability are meanwhile having drastic impacts upon your crop production. This affects livelihoods in multiple ways. First, local food availability for the purposes of subsistence living are impacted. Secondly, Fiji has commented, that this factor has additionally influenced the social patterns in villages. Third, beyond crop production for yourselves, there is the impact upon export production. This brings to mind both Fiji's and Mauritius's sugarcane production and export.

When it comes to tourism, St Lucia has commented that there are fewer corals to see when snorkelling. As we have discussed, there is a range of reasons why the coral is being damaged, but some of this includes ocean acidification and temperature rise, over which we have no immediate control. The result is coral bleaching and meanwhile snorkelling has been a major activity for tourism in your islands, so this has an impact on livelihoods within the tourism industry, over which you have very little control.

Finally, in the case of St Lucia, an influx of sargassum seaweed has been baffling and overwhelming. So far, you've only mentioned this briefly, but I'm wondering how this is affecting your livelihoods and how you are responding to it. This could well be another example of uncontrollable environmental

[9]As highlighted, in a Summary Report by the 2018 Intergovernmental Panel on Climate Change (IPCC), "Warming from anthropogenic emissions from the pre-industrial period to the present will persist for centuries to millennia and will continue to cause further long-term changes in the climate system, such as sea level rise, with associated impacts…" (Intergovernmental Panel on Climate Change, 2018).

change that is having causing great concern because of the impact it is having on the livelihoods, particularly of fishermen and for the tourism industry. Could you share more about your experiences with this?

5. Mangrove Conversations in St Lucia and Fiji

St Lucia: That messy, incessant seaweed

'Let nature take its course.'

In this conversation, the mangrove trees from St Lucia recall a situation about a severe seaweed influx that created a sense of panic amongst the people. They share how an experiment with time and trusting nature led to a great surprise on the beach.

This conversation takes a form closer to storytelling, with the mangrove trees articulating the knowledge and experience which was conveyed across numerous interviews and focus groups in which the issue of seaweed was discussed as a pressing environmental concern for St Lucia. The mangrove speech is in orange while my text is in black. Some direct quotes, from these interviews are included, as delineated by quotation marks, but overall, the mangrove voice without quotation marks serves as conglomeration of perspective as shared in the conversations during the fieldwork.

In order for the mangroves to more freely tell their story about the appearance of the seaweed, the human responses to it, and to retell one particular surprising situation, my analytical commentary in largely withheld until after the conversation concludes. Therein, I explore three enablers to trusting nature: having an understanding of nature that is proximity-informed, having stories upon which to draw, and possessing a multiplicity perspective through income diversification.

St Lucia mangroves, can you say more about this seaweed the people have been concerned about?

Do you remember back in St Lucia when that terrible seaweed caused such a havoc?

Those were crazy days!

Why, what went wrong with the seaweed?

It was the summer of 2014 and this strange seaweed began to pile up in quantities so vast I cannot recall happening before.

But we've had seaweed accumulation before, no?

Sure, but not like this. Remember how it lined the beach up and down? It covered the sand entirely in a rainbow of yellow, orange, rust and black, piled up high to our trunks, reaching people's knees. People would move around on the beach, bouncing around like walking on a seaweed sponge.

And the sea turtles struggled too, remember?

Oh, did they get caught up in it?

Worse than caught. They could hardly get onto the beach to lay their eggs, and digging their nests was nearly impossible. When the little turtles hatched, they really struggled to get down to the water!

The fish suffered too! There was so much seaweed in the water in some places that there wasn't enough oxygen and many fish died.

How did the people react?

Families who came for a swim could hardly relax. There was too much seaweed on the beach and in the water. It ruined family picnics and outings.

Sargassum seaweed on St Lucian beach which is visited by sea turtles for laying eggs. Fieldwork photo

Everybody was complaining about the smell as well. Wow, it was bad. The seaweed decomposes and the smell is pretty putrid to people, especially on the coastal towns, but that smell wafted up all along the coast along from the airport and up towards Castries on the other side of the island.

And you know that the taxi drivers were telling tales to visitors about what it was in order to cover up the fact. Townspeople were complaining that it was making it hard for them to breathe and they were worried about their health. One of them said, 'this thing produces a terrible sulfuric smell and it's really uncomfortable. It causes respiratory illnesses. People have been reporting irritation, poor breathing, that kind of stuff.'

Oh, so were people beginning to panic about it?

Yes, especially the fishermen. It was serious for them! Some of them were stuck in the bay for days because there was too much seaweed to move through the water to get out for fishing. When they got out, seaweed was getting stuck in their nets, boats, everything needed repairing.

Did it impact the tourism in St Lucia?

Kite surfers were getting seaweed tangled in their boards, and the sports operators were losing business. One of them said, 'if it's going to be like this every tourist season, I don't know where the tourists are going to go, but that side of our business, I don't know what's going to happen.'

I imagine the hotel owners were worried about it too?

Yes, tourists were complaining about their expensive beach holidays being ruined. They were upset! The government was really worried about that. They were concerned that if people complained that St Lucia's beaches were not clean but covered in seaweed that the reputation would spread and tourists would stop coming. Hotels promise their customers sandy beaches and the hoteliers saw the seaweed as unsightly and someone observed that 'it's not something they want to see every day on their beaches in front of their properties so they have to do something about it.' People were afraid that this seaweed invasion was going to damage their health and economy. With no end in sight, nobody could say when it would stop.

Was it all bad news – was there any positive side at all?

Some people did try to make something good of it. Initially the fishermen were happy at the rise in their daily catches because some mahi-mahi nurseries seemed to travel with the seaweed mass and the fish catches were really good at first.

Other people began using the seaweed as fertilizer. But there was too much of it, and it kept returning.

What can they do if there's so much of it and it keeps coming every day?

First, people began to remove the seaweed right away. They came in teams and removed it by hand, but it was painstaking work. So, then they started bringing in tractors onto the beach and took the seaweed out that way, with heavy machinery. But that put grooves in the sand, and we know it's damaging to the beach. Somebody pointed this out, saying that 'Heavy machinery is used on the beaches to actually clear that. Now, this is a very highly damaging activity and its highly unsustainable. The fact of the matter is that using heavy machinery on the beach would cause lots of erosion, sand compacting and so forth and so on.'

Even when they brought tractors down on the beach, it was too much to handle. In one afternoon, we watched a group clean the beach from one end to anther and you know what they said when they were done? 'I mean, when we get tractors to go down there, we work for the entire day and we cannot see where we started, you know? So, we can't make much of a dent.'

So, everyone was pretty worried, then, huh?

I tell you, there was one, a Seashore Man in our area of the coast, he didn't get fussed about it. We know him very well. He and his friends had worked on the coast for a long time. They would come down every day working hard to maintain the habitat and bringing visitors to find out more. This one, he tried something different. He knew that nature could offer a different course if given time. He watched and took a special interest in our area of the beach. We watched him doing this for a few months.

What was his approach?

He didn't clean up the seaweed. He left it all right there for weeks and didn't let a soul touch it either. He's very patient. His mother used to tell him stories about how people are too obsessed with cleanliness and were always trying to make nature tidy. This reminded him of the way the tourists and hotel owners couldn't stand the seaweed and saying that it was horrible and ugly. She told him how

this works against nature and he noticed that people in their obsession with it can't see the natural process happening around them. But him, he knew something good would happen if he just left it alone. He was always saying 'let nature take its course.'

So, what happened?

It built up, a lot of it, and then started to integrate into the sand and the beach began to change. It was being restored, building back up to where it had been eroded for years. He said, 'from the time this seaweed come, no interference with it, the beach has come back at least 12-15 feet.'

That's remarkable! But why? What does seaweed have to do with the health of the beach?

He told people that leaving the seaweed alone acts as a filter and retains the sand that comes onto the shore with the waves. That sand builds up over time, widening the beach and when the seaweed finally decomposes, the sea washes it back out.

He started to bring people down to the beach to show them what happened when he left the seaweed alone. His message was to trust nature and her processes and to be in less of a hurry. He encouraged people to let nature heal itself because time and tolerance is what was needed to transform the beaches back to a healthy state.

You know, he told these people, 'We like to see some things fixed too fast, but we don't understand that everything has life. The sea has life, the land, the plants and everything. So, if we trouble the sea while it's doing its work, we are in for destruction. So, if we let the sea do its work, we are being protected. Let nature take its course, I always tell people that. Because the sea is alive and the sea will build resilience for it not to destroy the mainland.'

Post-conversation commentary: Three enablers to trusting nature and responding with time

In this post-conversation commentary, I wish to convey some of the understandings I gleaned from the St Lucia mangrove, principally the importance of trusting nature, and of taking time in responding to environmental change in a way that allows for experimentation. I demonstrate here that some enablers of this outlook include: an understanding of nature that is proximity-informed; having stories upon which to draw, and; a diversification/multiplicity perspective.

The seaweed that inundated the Caribbean coasts, most heavily from 2011 to 2015, is of the Sargassum species; two types of which are free-floating and not anchored to the seafloor (CARDI, 2015). Discussions at the time of fieldwork indicated a wide range of ideas about its source and likeliness to persist, reflecting the uncertainty in the scientific community at the time. It may either have detached from the 10 million tonne mass of seaweed resident in the Sargasso Sea of the Atlantic

ocean, from other sources in the Gulf of Mexico, or from more newly discovered sources in the Northern Equatorial Recirculation Region, with the likely causes of the previously unexperienced levels including climate change and algal blooming (Milledge and Harvey, 2016).

In the mangrove discussion you just read, we hear that nature has a job to do in caring for itself and that we ought to be careful about our human intervention. The mangroves explain one Seashore Man's approach to 'let nature take its course,' which requires a longer-term outlook, while many around him had a reaction to intervene immediately. We also saw what was beginning to happen in those instances where people prevented nature its own process and course of recovery. Community group and government responses alike relied upon interventions that included heavy machinery usage (Caribbean News Now, 2015; Olibert, 2014). In many instances, this was the immediate answer, with very short-term gain but long-term consequences, including "very real risks of worsened beach erosion from physical damage of machinery and unintended collection of sand," (Doyle and Franks, 2015). It is hopeful to note some that instances, including some tourism industry advice, (CHTA & CAST, 2015) advocate for manual removal resulting in lessened impact on the beaches and on affected wildlife, including sea turtles.

So, I wondered, if we know the long-term consequences of unsustainable practices, such as harvesting Sargassum seaweed with heavy machinery, why do we see the persistence of such interventionist actions? What are the barriers to reacting to environmental uncertainty in a way that permits 'nature to take its course'? One strong reason for this is fear, a theme which will be explored again in a later mangrove conversation. Other barriers will also be addressed later, so here I wish to address instead the enablers of taking the long-term outlook to environmental uncertainty. What, I ask, are the circumstances under which we can act like our Seashore Man? Under what conditions are we more likely to slow down with our decisions in circumstances such as the seaweed influx where we do not yet know the cause or the likely effect or how long it will last. In other words, in the face of uncertainty, what permits those like the Seashore Man to resist fear and instead to act with faith in nature and with a long-term outlook? Here, I briefly explore three such enablers.

Enablers to establishing trust in nature and fostering a long-term approach within environmental uncertainty

The first is a proximity to the environment which is being affected. The Seashore Man makes his life in this environment. He has an intimate, everyday interaction with the seaside, and a relationship with the coastline.

Thomas Berry, who was a major force behind, if not the grandfather of, the New Story movement stated:

"We might summarize our present human situation by the simple statement: that in the 20th century, the glory of the human has become the desolation of the Earth and now the desolation of the Earth is becoming the destiny of the human. From here on, the primary judgment of all human institutions, professions, programs and activities will be determined by the extent to which they inhibit, ignore, or foster a mutually-enhancing human/Earth relationship." (Thomas Berry, quoted in Brown and Timmerman, 2015, p. 66)

This relationship, or proximity to the environment, in the case of the Seashore Man means he can notice small changes that might pass the rest of us by. And it furthermore enables a trust to be established, if not also a curiosity as to what the Earth's natural response will be to this otherwise messy, incessant seaweed.

This closeness or relationship to the seashore environment helps to foster the second enabler, which is a catalogue of stories about this environment that inform his relationship to it. Seashore Man applies stories from his childhood, from his elders, to the uncertain circumstances in order to make sense where there is otherwise chaos. We hear from the mangrove that he was able to be comfortable with what others deemed the 'dirtiness' of the seaweed. He could be comfortable with it because he drew upon stories from his mother about how human obsession with 'cleanliness' would effectively work against nature and blind them to the natural processes going on around them. What the mangrove does not convey to us are further details of these childhood stories, which he graciously shared, with great laughter and animation, wherein his mother warns him that 'cleanliness will kill you':

'You see? I learn this thing, I tell you how. My mother and grandmother used to tell me, cleanliness will kill you. Yes, she used to tell me. But nastiness – not nasty, nasty, but okay, if you come home late some day, you're hot or whatever, you just jump in, she tell you what sense it making like you don't wait for your body to cool and everything to go bathe. So, you think that you are going to be so clean, you go ahead and get some sickness under the cold water and then you get a draft or something. So, what you see as being dirty, it is for a

Seaweed in hand, St Lucia. Fieldwork photo

reason, and then it will clean it off. … I've seen it a lot of time in the mangrove … and then if we just trust nature, everything will be alright. But the fact that we always like to be clean.'

Combined, these first two enablers help us to understand the importance of supporting a New Story of how humanity can live with nature, one in which there is an attempt at greater symbiosis rather than domination or struggle. One, like Seashore Man's story, where we are working with, and trusting, rather than literally bulldozing over.

The third enabler is one that brings us back to the theory of multiplicity, in the form of diversification. As one of the core philosophical tenets that I take up throughout the thesis, I am interested in how this concept plays out in socio-ecological responses to environmental change. Because his livelihood is not threatened by the Sargassum seaweed influx, Seashore Man does not succumb to the panic being experienced by so many others. This enables him to respond with a longer-term outlook and supports him in resisting the need to clear the beach of the seaweed. While his livelihood is indeed on the coastline, he has varied income streams and work projects, meaning that he can rely on activities that are not dependent upon the eradication of the seaweed. Instead, he can turn to activities that are not impacted by the influx which allows him to relax into the situation, giving him the space to 'wait and see' what nature will do.

Diversification is nothing new within resilience studies. Ecosystem studies in particular demonstrate clearly that biodiversity supports ecosystem stability (Loreau and de Mazancourt, 2013; Tecco et al., 2014). From a philosophical perspective, Calhoun himself evokes the species diversification example in his argument for the positive value of cultural difference as it relates to the advancement of critical social theory (1995, p. 74). Multiplicity in the form of income diversification for human resilience is also well argued within the sociological context, particularly in small states, where the early work on vulnerability and resilience referred primarily to nation-state economics (Briguglio, 2014; Briguglio and Kisanga, 2004).

These aspects combine within the socio-ecological world of resilience inasmuch as individuals or groups who have obtained "occupational pluralism or diversification" are able to support a "weather the storm" approach to when faced with environmental surprise (Davidson-Hunt and Berkes, 2002, p. 64). This was argued strongly at one focus group, where the approach of 'strategic flexibility' was identified as a Caribbean approach to dealing with environmental changes:

'Because, you know, if one thing is not working, you go and you move to something else. You're building homes, you're selling cars, I don't know what else. You can't depend on one thing. Well, you have to

shift and move around. It's five different types of income, you know. It's not just working for somebody and getting money.' (focus group participant, St Lucia)

This was discussed at length as a way that St Lucians, particularly farmers and fishermen, are dealing with drought, flooding and changes in fish stock.

Having diversification of income streams may sound well intentioned yet foolishly optimistic, given the challenges already faced by those working on the coastline for whom income generation was proving a struggle before the Sargassum even appeared. Fishermen, in particular, had already been battling a diminishing fish stock and in some cases loss of equipment from severe storms, or forced to make very difficult decisions on the edge of a tropical storm, as the situation was highlighted during one particular interview:

'These guys have been basically self-sustaining, doing things for themselves since they were 17, sometimes even younger, 15. … You may say, you're in the ocean now and once you're here there's a warning of a coming storm and you need to run and pull out your lines out of the water, you need to bring out your boat, and these things make sense, but really? In a short space of time you tell him he needs to bring his boat out of the water? If your landing sites don't have the gear they just can't do it, you know? … And then you tell them you need to go home and you need to board up your house and so on, so fishermen have to decide – do I help my family, wife and kids, or do I wait three hours in line just to get my boat pulled up. So lots of them take a chance, tie their boat to the jetty and leave it. And then next they say that the fisherman were told to move their boats and they did not. So then the banks help with insurance, but any fisherman who did not move his boat doesn't qualify because he was told to remove his boat.'

You could argue from a Maslow's Hierarchy (Maslow, 1943) perspective that one will not be motivated to operate from a place of altruism towards the environment unless one's basic needs are first met. From this perspective, fishermen who are struggling to put food on the table, or need to take such high risks in the face of environmental change, may be the least likely to take up Seashore Man's 'wait and see' approach to the seaweed. Meanwhile, the Sargassum itself is presenting some potential income-earning avenues, including seaweed harvesting for commercial sale of fertiliser and food products (Milledge and Harvey, 2016).

What my interaction with the mangrove taught me is that where income diversification in the face of environmental uncertainty can be achieved, this not only allows people to survive financially in the face of environmental events which might otherwise threaten their livelihoods, but it further enables people to respond to the environmental event with patience, with a willingness to 'wait and see what

nature might do for herself'. This could serve to foster an approach to experimentation, like a Deleuzian line of flight, similar to the Seashore Man who dared leave the seaweed on the beach and observe over a period of time the natural reaction and process.

Fiji: Renewal and laughter

'With any natural disaster back then, it would happen, and it would come in to clean or begin a new livelihood.'

In this conversation with the Fiji mangrove cluster, we join the mangroves who are enjoying a little laugh with an anecdote, followed by the retelling of a traditional Fijian folktale. The conversation then transitions to hearing the perspectives of a village chief and his family concerning the role of tropical storms as traditionally held in the village, as well as the shifting popular perspectives and its effect on traditional beliefs.

The writing style here is rather different from the St Lucia seaweed episode because it draws upon multiple narrative elements which can be understood as different forms of 'telling'. I have done this in order to demonstrate the range of both modern and historical perspectives that were more evident in the Fiji context during my fieldwork. An anecdote of the swamp crab doing push-ups, and a joke about people selling fruit juices to those stuck in the traffic jam trying to escape the tsunami are modern occurrences and accounts. Meanwhile, the inclusion of a Fijian folk tale of Ravuvu the Dart Thrower comes from a tradition of story-telling, which is steeped in oral heritage and recalls creation accounts of the Gods as a way of explaining why things function as they do, and how places and traditions come into being. The Fiji mangrove text is in blue font.

Through the conversation, themes are explored such as laughter and renewal as related to environmental events. Following the conversation, my commentary challenges the DIOT of disaster in the face of environmental uncertainty, which I argue is founded on the basis of fear. I highlight the alternatives of humour and an appreciation of the multiple purposes or functions of natural occurrences such as floods and tropical storms then conclude with some thoughts about reaching further back in history as a way to address uncertainty.

While finishing the conversation about seaweed with the St Lucia mangroves, I was suddenly struck by the amount of laughter arising from another section of the mangrove and wondered at the light-heartedness that was emanating, just hours after the storm. It was the cluster of Fijian mangroves who were in the midst of a lively story-telling session. I approached them respectfully, hoping they might welcome me to listen.

Bula Vinaka [10]. It's good to see you have weathered the storm in good spirits.

What brings you here on this morning, vulagi [11]? All the other people on the island are assessing the damage and gathering provisions.

I've recently heard the news that the leaves bearing the resilience tracing have been blown off the Tree of Resilience. Everyone there is scrambling to rewrite it. Because I know that mangroves are good at weathering the storm, I've come to ask how you manage this. Your insight will be especially important. I heard you beginning to tell a story, would you mind if I listened?

Certainly, we were just recalling a comical anecdote from a village in the south east of Veti Levu, our largest island in Fiji. It's a funny story about sharks, the mna, and the kooka. Do you know what those are?

Yes, they are types of crab. The mna is large swamp crab and the kooka is a much smaller crab, right?

Indeed. Some years ago, after a serious cyclone, the rivers of Veti Levu began to flood. The Winimala and the Wainibuka spilled into the Rewa river where the banks were overflowing into the villages. Thankfully, many of the homes in this area are built up high, on stilts, sparing some families from losing everything. The people there were accustomed to flooding, but this was on another scale altogether. The way one person told it, a particular homeowner pushed open his window and looked down underneath his stilted home and was brought to laughter by what he saw. 'I looked down on the ground and I saw the sharks meeting under my house!' He said. 'The mna was standing there holding onto the side of the door, and just behind him was the kooka, doing press ups behind him, trying to get up onto the landing as well away from the water! I mean, the water was so high that the sharks could come under the house and hold a meeting there!' [12]

Imagining that scene just makes us laugh! Oy, ley! [13]

---

[10] Bula Vinaka = Fijian for a warm hello
[11] Vulagi = Fijian for outsider or foreigner
[12] This short anectode is a Fijian story told by a participant and abridged here.
[13] Oy ley = phrase to express humour or surprise

That's pretty comical, the idea of the sharks and the crabs and the way that the storm affects them too, bringing them into and around homes that they wouldn't normally visit. I'm curious, how do you manage to stay so upbeat and full of laughter when the mood is otherwise so low right now across the island? Some might say that it is disrespectful to be so light-hearted in the wake of such a storm.

Well, we don't see the cyclones and the flooding only as disaster. There are positive things that can come from these natural occurrences. It's not simply a time to mourn. You know, sometimes in our traditional folk tales, these natural occurrences - things you are accustomed to calling disasters - are actually understood as gifts of reciprocity.

It's like this in the tale of Ravouvou the Dart Thrower. Let me summarise for you: Ravouvou, ancient forest god of Kadevu, the fourth largest island in Fiji, was fond of playing veitiqa or darts. In one episode of dart throwing, he benefits twice from the gifts of the fisherman's god. First in borrowing some fishing net to help make his dart fit snugly in his throwing reed, and again after a dizzyingly successful dart throw. Our storytellers tell it so:

> *"The god-giant put his hand up to his eyes to find where his dart had landed. It was so large that he could see it bobbing up and down on the waves. But the effort had been so tremendous that he was overcome by giddiness, and for two whole days he was unable to shake off this feeling and he staggered wherever he went. He thought the only way that he could put an end to the giddiness was to drink some hot soup. He asked the god of fishermen if he could provide him with some, and as soon as it was heated, a big bowl was given to him. He drank it at a draught and felt better at once. Grateful for the help of the fishermen's god, he promised that in future he would get his servants to provide the god with all the firewood he needed. "I will flood the mountain rivers," he said. "They will bring you down all the wood you need for your fires." Ravouvou kept his promise. In the rainy season the flood waters tumbled down the mountainside, carrying with them masses of firewood, which piled up on the beaches at the mouths of the rivers. "If there is not enough, do not be afraid to ask for more," Ravouvou assured his friend the fisherman god, "but I don't think that you will ever need to ask, because I will supply you with all you need. Whenever you have enough, just blow a conch-shell and I'll command the floods to subside." To this day, in the village of Joma a conch shell is blown when the floods subside, because the people of that village have never forgotten the promise that the forest god made to the fisherman's god."* [14]

But didn't the wood-bearing flood also bring destruction to the village?

Of course, destruction can come from weather events and natural occurrences. Fresh in our memory is the loss of life and damage brought to Fiji by recent Cyclone Winston.[15] That was the strongest Cyclone on record in the entire southern hemisphere! We hear people telling all the time, and we

[14] Abridged from Myths & Legends of Fiji & Rotuma (Reed and Hames, 1967a)
[15] Cyclone Winston hit Fiji in February 2017, killing 44 people.

have experienced ourselves, that the weather patterns are changing in these recent years. But, natural occurrences such as these are not simply destructive.

In fact, before we were brought from Fiji to this island, we knew a chief and his family who spoke about the benefits of such events. They recalled that the people of the village used to see the events, which you call natural disaster, as a source that can bring renewal, blessings, and helpful checks.

The chief spoke of the attitudes when he grew up, and the functions of the storms, saying 'when the hurricane hit, it's not an isolated event, it has something to do with our environment providing for us or preparing us.' His family concurred, 'with hurricanes as well, or with any natural disaster back then, it would happen and it would come in to clean, or begin a new livelihood.'

Not necessarily to destroy?

They said that the storms come, 'not to destroy, no, it was to come and clean. Renew, to start again. To renew the old trees, you know, if your natural building code wasn't appropriate this was the check! So, then you maintain the traditional structure and utilise the people who have traditional skills and tasks.' This included the tradesmen in the villages that were especially skilled in traditional crafts that became particularly important in the rebuilding of the village structures after the storm. In this way, the storm helped to keep alive particular handicrafts.

So, cyclones were seen as part of maintaining a certain societal system?

Right, their perspective was that, 'hurricanes weren't feared – it was part of the living. It was part of the programme at the time. It was a good check, eh? It was a good check if there were omissions, and the hurricane was really here to tell us, as a message.'

Did the storms have other roles to play as well?

They were traditionally seen as bringing blessings, especially through an abundance of food ahead of a storm. This abundance was also a sign that it was time to prepare for a storm. The chief used to say that 'One of the ways we were warned, and still do, we're told if the fruit trees bear overabundant, it's in preparation for a real big hurricane. Through the trees bearing fruit, having food on the trees, that's a blessing. The nature is responding, is blessing us. Hurricane is not something that is isolated.'

But, would not strong cyclones blow away all that abundance of food? Isn't that a kind of destruction?

With the abundance, they would start preparations. The family remembers how the villagers 'used to conserve this food, underground. They dig pits and they plant it with leaves and they put the breadfruit for the hurricane, breadfruit, everything, bananas, and they cover it properly with leaves, to seal it,

airtight. And they bury, leave it there. And the hurricane might come one or two months later, this fruit will wait and they go and dig it up. The food, the crops are still good, you boil it, eat it.'

So, in this way, the messages and the abundance and blessing all come together. But this family seems to be speaking of times past. How much is that the reality now? Are cyclones still largely felt to be helpful?

Well, some of this attitude is dying away amongst the people. The weather is becoming less predictable and people are relying less on natural signs. They are depending on technology more to tell them the weather patterns. But we also see in the natural environment that the pattern is changing. In Fiji, the land has suffered from severe droughts the past few years. The growing pattern is changing, and consequently, the people around the islands are experiencing a lack of confidence to rely on traditional natural signs.

The chief mentioned how this is affecting the village. About the villagers, he said that 'they no longer have evidence to live, they are living by chance. The pattern used to be very clear and regular. Now we've lost that pattern. And we have fruit trees bearing at the wrong time. We could have a cold night in the middle of a hot weather, really chilly night. Somehow it has lost the pattern and in rural areas, it's affected how we prepare our lives. That's disoriented the communal pattern of living. This change in the weather has brought some confusion. They've lost that skill in planting food crops at certain months for the rainy season. They don't trust that it will work, they've abandoned the skill and have to be reminded of it because there's no longer a pattern in the weather. Hurricanes come at the wrong time, the rainy season comes at the wrong time. In certain ways, the confusion discourages us from exerting ourselves, because we are used to living in an environment where the weather is really regular and we can respond to it in a programme that we plant a certain month and this change in the weather has brought some confusion. And that affects how we programme our life. Particularly the communal context.'

So all this change in the weather pattern, including any predictability of the cyclone season, is causing people to lose confidence in their traditional practices? Uncertainty can definitely make people feel afraid. Are there things other than cyclones that are causing fear?

As coast-dwellers, we occasionally experience tidal waves or tsunamis. These are much rarer than cyclones, but if you live anywhere near the coast, they're terrifying, really!

How often do they happen in Fiji?

Not very often, though there was a large tsunami in 1953. I don't recall it myself, but heard someone talking about it once. I heard them saying, 'in those days, we called it tidal wave. Again, in Fiji, as we

do, they say, all the other races, the Indians, the Europeans, ran up the hill. The Fijians who lived by the sea, because they didn't understand it, ran with their buckets to pick up all the fish from the sea bed, because they never understood it, they didn't know that the water was going to rush back.'

So, the younger generations won't remember this tsunami. Was it an event that was serious enough to remain in the collective memory, though, perhaps talked about by parents and grandparents?

In part, because children are told about it in school, but also because they watch modern films about tsunamis. Some think that this is a good way to show how frightening the tsunamis actually are, so that in the future, people will know to take it seriously and get to safety. They say that, 'Tsunami is a new word. Tsunami is scarier than tidal wave! The first time that it really hit me when a tsunami could do and the speed that it happens, and the destruction was the movie *Impossible*, depicting the tsunami in Indonesia. And it gave me some idea of – okay – this is what happens, this is the speed in which it happens, you can tell me all sorts of things about environmental stuff, but I'm talking about when it HAPPENS! They need to show that kind of thing – it's visual, it's real.'

And so, are people afraid of them today, even if they aren't frequent?

There have been plenty of warnings for tsunamis in Fiji. And of these, people are definitely frightened. 'We've had two recent tsunami warnings in Suva. In the past 5 years, we've had tsunami warnings every year and even now, it's been two tsunami warnings a year. What happened in those occasions was the warnings came, and everyone jumped into their cars. All the cars were caught in traffic jams, all around Suva. There was absolute confusion. It's a real panic station for us right now, on these two occasions.'

And, would you believe, even in the midst of that panic, people still managed to be humorous! Remember one of them saying, 'And you know, we were joking as we do in Fiji, yeah? We were saying, you know, you could make a bit of money by selling some juice on the way to these people in their automobiles. You know, as we do in this country.'

Post-conversation commentary: Challenges and alternatives to a DIOT of fear and disaster

I pause here for some reflection and commentary before continuing to another Fiji mangrove conversation, which will explore some of the barriers that communities face in maintaining their own resilience practices. In the present commentary, I focus on the interrelated aspects of disaster and fear in order to challenge a Dominant Image of Thought surrounding natural disaster. I comment on some alternatives to this disaster lens before critiquing the fear-based orientation from which it sprouts, arguing that fear can serve as a motivating factor in only certain circumstances, but can be

damaging in others. Finally, I briefly consider reaching further back into history as a way to address uncertainty of environmental change.

Alternatives to a DIOT of disaster

The world over, natural occurrences such as flash floods and tropical storms get positioned almost solely as disasters. One way that this DIOT of disaster is perpetuated with respect to tropical storms in Fiji and the Pacific region is through the media. Media can be seen to sensationalise world events by focussing almost exclusively on destruction, heartbreak and overwhelmingly bleak prospects for recovery. It is true that Cyclone Winston was the largest storm on record in the Southern Hemisphere as of February 2016. I am not trying to diminish the obvious destruction and pain which resulted, which did include loss of 44 lives, and I spoke to members of communities that were still rebuilding schools and homes 14 months later. On a follow-up field visit, in April 2017 an interesting story was relayed to me about the international news coverage of Pam, another Category 5 Cyclone which hit Vanuatu in 2015:

> *Fieldnote from April 18, 2017: Had an insightful conversation with a group visiting from Vanuatu about the aftermath of Cyclone Pam. They conveyed an episode about a news reporter from a highly respected international agency who was told to resubmit his field report because his first attempt it wasn't tragic enough. On second attempt, he was being filmed next to the only toppled tree in the area, making false statements about the road behind him being inaccessible. People standing nearby, who had just accessed the road, could not understand why he would be making up such stories. The message I received from the ni-Vanuatu was that the storm wasn't as tragic as the international news portrayed.*

Yes, it is true that there is an increased likelihood of extreme global weather events, on a stronger scale in the future. I would like to argue, however that there is a problem with approaching this phenomenon from a disaster-dominated orientation, which is that this directs people immediately towards pessimism by focussing predominantly on negative aspects associated with climate change. This subsequently casts into the shadows some of the alternative perspectives about tropical storms, such as those offered in the Fiji conversation, and often ignores any type of suggestion that there are benefits of natural occurrences.

This story from the Fiji mangroves thus far demonstrates that there are indeed alternatives – or lines of flight - to the DIOT of disaster, particularly when it comes to floods and cyclones, both in terms of preparation and recovery. One of these alternatives is through humour. Epeli Hau'ofa, the Tongan and Fijian writer, anthropologist and much-respected advocate of Pacific knowledge and powerful thinker on topics such as inequality and development practices in the region demonstrates this well.

The following comment, in a published interview with Subramani, seems to me to speak loudly about the positive possibility of an alternative to fear through the act of laughter:

> *"Laughing at problems, especially seemingly intractable ones, is a feature of many Pacific cultures. For me, this capacity for laughter, for grabbing moments of joy in the midst of suffering is one of the most attractive things about our islands. We laugh, we cry, and we often do them simultaneously." (2008d, p. 139)*

In the mangrove conversation, this is exemplified through the story about the sharks and the crabs; once the immediate threat has passed, it is possible to quickly see some comedy in the situation.

Another alternative to the disaster DIOT is a general disposition regarding the multiple purposes or functions of natural occurrences such as floods and tropical storms. In the Ravuvu folk tale, floods are a way to offer a gift of firewood, an exchange, a way to repay a debt. In this folk tale, and then in examples given by the village chief and his family, we see that there are ways of valuing and even appreciating natural occurrences that, yes, bring some destruction, but also play many other vital roles for the land and society. These range from blessings of abundance, acts of reciprocity, processes of renewal and forms of testing or checking.

This orientation of purposefulness, or acknowledging the positive functions of natural occurrences, is rooted in a Fijian way of relating to one's place or environment. This is the guiding concept of the v*anua*. *Vanua* is an operating concept that links people to the environment, offers a sense of belonging and purpose and place, both societally and geographically. In this way, the natural occurrences can help to keep the *vanua* alive and maintain it as an integrated aspect of society because it allows specialists to operationalise their traditional skills in preparation, recovery and rebuilding. In this way, natural occurrences can serve to positively bring together communities. The multiplicity of ways in which traditional approaches to natural occurrences, including the beneficial, therefore maintain certain social functions that preserve the *vanua*.

Disaster-orientation as based on fear and uncertainty

Despite these alternatives to the DIOT disaster orientation, it continues to be prevalent in Fiji, and there are several reasons why. In addition to the media aspect explored earlier, national and regional policies also tend to orient Fijians to a disaster mindset. We only need consult Fiji's Second National Communication to the UN Framework Convention on Climate Change (Republic of Fiji, 2014) to see some of the governmental initiatives and policies that have are linked to climate change in order to understand the evident links with disaster approaches. Here, we see: National Disaster Management Office, National Disaster Management Act of 1998, Disaster Risk Reduction and Disaster Management Framework 2005-2015, Joint National Action Plan for Disaster Risk Reduction and Climate Change Adaption.

In the wider Pacific region, policy about sustainable development, climate change, disaster risk reduction and resilience are becoming intertwined, with climate change and disaster risk practically inseparable concepts now. I saw this as a highly visible point at the 2014 UN Small Island Developing States (SIDS) Conference, with numerous presentations applauding the innovative approach of combining the work of Disaster Risk Reduction and Climate Change plans across the Pacific region. In fact, Fiji has been somewhat of a case study in the region towards the move to "overcome the separation of these two dynamic and overlapping fields," (Gero et al., 2011) since before 2011. In other words, integrating these concepts and areas of work has been a priority for the region for a number of years.

Within Pacific Island Nations, these development concepts are highly integrated with one another. I do not argue against potential benefit from a wider systems approach, however, it does not escape me that disaster is prominently in the discourse of climate or environmental change, as opposed to policy priorities or initiatives that put attention upon aspects of nature appreciation, or local knowledge of environmental change.

What conditions allow for this disaster orientation to take hold so firmly? First, as is obvious and already highlighted, the destruction from natural occurrences is evident and visceral. This can be understood as biological, evolutionary necessity - to have some fear of certain natural occurrences that can lead to loss of life – as a protection mechanism. Second, I would argue that, within the present day, there is a growing amount of human fear which allows the disaster discourse to resonate so strongly against the Anthropocene backdrop. It may go without saying, but is helpful to point to the obvious here, that any disaster orientation will have a fear component. It is fear that makes us heed the disaster orientation in the face of environmental uncertainty and change. Fear is the emotion that grips us and gets us to take action. Fear has been one of the burning platforms of climate change, which moves individuals and nation states to initiate action towards its mitigation and to make societal adaptations.

From where does this fear arise? When can it be helpful? When is it damaging or a barrier?

Through having conversations in the mangrove, I understand that this fear is largely the result of uncertainty. Some of this uncertainty is highlighted in the first mangrove conversation wherein the context and the pressing environmental concerns are expressed. The mangroves have told us that the growing seasons are changing, which makes it difficult to plant and harvest reliably, that the tropical storms are more frequent, stronger and not according to the pattern of the past.

Meanwhile, one place where fear may be well positioned to positively address resilience to natural occurrences is surrounding events for which we have no corpus of local or traditional knowledge upon which to draw. This is uncertainty at its strongest: where there is no past experience with which to anticipate, prepare or recover. The tsunami occurrence in Fiji is a good example of this. Fijians do not have a great deal of experience with tsunamis because there have not been many. As we heard from the mangrove, that lack of knowledge resulted in people putting themselves at even greater danger by approaching the beaches at the time of 'drawdown', when the coastal waters recede, leaving the sea floor more exposed than normal, whereby, "Individuals who do not recognize this as a common precursor to tsunami waves often find themselves gravitating toward the exposed shore" (International Tsunami Information Center, 2017). In such instances, fear may be a good motivator for preparation and education, and indeed that was being demonstrated in Fiji, based on discussions about tsunamis.

I am not arguing, therefore, for the abandonment of all approaches to 'disaster' with respect to environmental change. I do not wish to advocate the abandonment of disaster risk reduction or management planning. However, in situations where uncertainty was demonstrated, the conversations with participants about existing local or traditional knowledge showed that this knowledge has been doubted in recent years. It was not the case that local or traditional knowledge did not exist, rather but that younger generations no longer deem it fit for purpose. These were situations where local and traditional knowledge in the village is somehow failing to show the way because the predictability - the pattern - has been disturbed. In other words, the uncertainty is resulting in a loss of confidence, including confidence of their traditional ways of knowing, to the point that people 'are living by chance,' as the chief tells us.

This has huge implications for social roles and traditional, local knowledge. I spoke with people who had moved from their villages following flooding and storm events because it no longer felt safe there. People are moving out of the *vanua*, and this includes practitioners of traditional roles and trades. These practices are being lost, driven, in part by the uncertainty that is brooding and the resultant fear. It appears that this uncertainty may be contribute to people to abandoning their traditional practices because they no longer seem fit for purpose.

Reaching further back to address uncertainty

In the face of this, I am left wondering: if current environmental changes and circumstances no longer fit the pattern of your historical and traditional knowledge, is not possible to go back even further in history – to extend the corpus of knowledge?

There are inspiring examples of this act of reaching further back – the integration of centuries-old traditional and local knowledge together with scientific data to help address the uncertainty of climate and environmental change. For example, the earlier case of co-production whereby Kalani Souza championed the integration of centuries of rain songs into the climate models with NOAA. What if we keep going further back in our search, our journey, our *Sokota*, for local and traditional knowledge where our current understandings of this knowledge is not yet sufficient – where it fails us and we begin to be captivated and captured by the fear-based approaches that override optimism in our quest to be resilient in the face of environmental change?

This is not the first time in human history on the Fijian islands that people have faced such uncertain environmental shifts. Fiji does haves access to an oral history and collective memory, as well as new and ongoing research that is reengaging with centuries old experiences of living with environmental uncertainty. When the Lapita people, a culture that is thought to originate in Island South-East Asia around 1500 BCE, settled in current day Fiji around 1200 BCE (Irwin, 2017) the sea level was likely to be between 1.5 and 3 metres higher than present day (Morrison et al., 2017). Fijian inhabitants later experienced a dramatic sea level drop between 1250 and 1350 AD during the mid-Holocene sea level retreat between 1250 and 1350 AD (Morrison et al., 2017; Nunn, 2016). Researchers are now learning more and more about this period, including how Fijians responded to this environmental change (Nunn, 2016). With information like this, it is possible to keep going back, to keep searching for a multiplicity of knowledges and blend these together to help us address current environmental changes and uncertainties.

In summary, there is presently a dominant way of thinking about natural occurrences such as floods and tropical storms. This DIOT is one of 'natural disaster', which is founded on fear. In some ways, this is unsupportive of local traditional knowledge. Fear-based approaches to disaster preparedness might work when local or traditional knowledge is not best placed to address environmental change due to lack of experience or patterns upon which to draw, such as with tsunamis. Thus far, the Fiji conversation and commentary demonstrates that there are indeed alternatives to this DIOT of 'disaster' and fear. These include the use of humour and a disposition of finding that natural occurrences such as flooding or tropical storms have purpose and positive functions. Where these approaches are insufficient, it may be possible to reach further back into history and blend these with other forms of knowledge to address environmental uncertainties.

Ultimately, operating from a fear-oriented perspective to natural occurrences can be a barrier to resilience and we will now move on to part two 2 of the Fiji mangrove conversation which highlights

other, often unintended, barriers to resilience as experienced in Fiji. Later, another the Fiji mangrove conversation, the blending of knowledges to help overcome these barriers is addressed.

6. Mangrove Conversations in Fiji and Mauritius

This second chapter of mangrove conversations is more in keeping with the concept of Talanoa, which is more dialogic and my reflective and analytical commentary is integrated into the conversation rather than presented as a separate post-discussion reflection. This mirroring my own pattern within the fieldwork, whereby discussions with individuals or groups, or over the course of a series of discussions with participants, I played a more active role in the conversation after having initially played a listener role. Over the course of the stories, therefore, I begin to interact more in the conversation, and my reflective or analytical commentary becomes more integrated into the conversation, rather than presented as a separate post-discussion reflection as was the case in the earlier chapter of mangrove conversations. This chapter also contains a brief interlude with the Dogfish Woman.

Fiji: Recoveries, inhibitions and barriers

'Resilience is kind of taking a back step because of government help, you know.'

This second conversation with the Fiji mangrove focuses upon the responses and behaviours evident in the aftermath of extreme weather events including tropical storms and flooding. The mangrove trees share stories of recovery, but also inhibition amongst the people in the wake of a flood or cyclone. A few barriers to recovery and resilience are explored. Some of these are discussed in relation to governmental programmes and advice which are intended to support communities in their recoveries but in fact are driving practices that look more like dependency and which diminish community or collective action. Finally, the mangroves relate and example of how people, despite these barriers, are still finding ways to help one another in recovery efforts.

This irony is explored with the mangroves, who again share the experiences of participants. As before, the mangrove text is in blue font and direct quotes from participants are embedded within the mangrove speech as delineated by quotation marks.

So far in our conversation, we have been discussing some of the dispositions towards or, responses to, environmental change and extreme environmental events like flooding, tropical storms and tsunamis. These responses have included some fear, but also standpoints of environment-human reciprocity, renewal of the environment, and the place of laughter in the face of uncertainty.

Could you share some specific examples or stories of how people recover in the aftermath of serious environmental events in Fiji? How do they respond and behave? What comes naturally and what is difficult about the aftermath of extreme weather events, for example?

Yes, well, we heard one chief and his family talking about how some projects from the government changed the way people responded and behaved after the storms and floods.

Oh? What government projects were those?

Well, for one, there was this scheme in response to the change in the weather.

You mean the frequency of the cyclones, like we were talking about earlier?

Yes, and the flash floods, too, which started to come with no warnings and destroying lots of homes over and over, in villages that used to be safe from these things. The chief said that people are 'thinking of moving because of those 2 or 3 floods, they happened at night.' He meant that they happened with no notice, not time whatsoever to prepare. He said that 'all the village washed away. It never happened before.'

Right, and then he explained, 'that's why we have a housing scheme, this was a response to the change in the weather. There are more floods and more hurricanes now than there used to, so the government has taken the initiative. People cannot be left on their own.'

So, the programme helped people who were really in need? That sounds good, right?

Well, it did help, but it also influenced how people respond after the storms. By this family's account, in the past 'when there was a hurricane, it caught the people together and they identified whose house had torn in the rain – a thatched house – a bure, and people just got together and the men would go out and get the bamboos and the women would help with the thatch and by the end of the day, there was a house built there, you know.'

Ah, yes, there was another man who had recently retired and gone back to live at his family home on one of the outer islands - he experienced something similar. He recalled the last hurricane he experienced there: 'Our kitchen was a wooden house and we lost the roof. And my uncle, who raised me, was still there at the time. Immediately after the winds calmed down, he called us to start to rebuild, to put back the roof that had been blown away. We were the only ones that did that.'

The only ones? Did he mention why nobody else bothered to try and fix their homes?

Yes, he said that 'The other ones waited for the survey. And the survey came and they all got replacement houses and all that. We missed out, but that's the thing that our people are beginning to lose, you know.'

What are they losing?

The practice of rebuilding together, as a community. He said, 'It's not like the past where people just organised themselves, went into the forest, gathered the material for their thatched houses.'

Common construction materials for homes today consist of a blend of wood, concrete and corrugated metal. Fieldwork photo

So, maybe people don't want thatched houses anymore; perhaps it has something to do with turning to more modern building materials, too? If the government can provide more modern materials, why wouldn't the people want those?

Some structures are primarily corrugated metal. Fieldwork photo

Yes, he commented on this, too, but his perspective was that even though the materials might be more modern, it left the villagers more dependent upon the government.

He gave an example of footbridge in the village, explaining that when he was growing up there used to be a simple, hand-made footbridge over a river. When a flood came, it was washed away. Then the government came and built a really big and sturdy bridge.

Did that not make people feel safer – to have a strong bridge?

He saw that it had a downside for the village: 'Now if something happens to this, we'll have to wait for the government, and for me, that's lack of resilience unless we can build the local replacement ourselves.'

Oh, so he has concerns about the village being dependent upon the government and not being able to help themselves anymore?

Yes, he thought that there are times when aid isn't necessary, that people can rely on their own resources and what is available locally on the land.

Also, we talked about food preservation earlier and what the chiefly family said about it in relation to preparation for storms. This man similarly said that people 'can rely on wild food sources, there was no need for relief supplies that now get delivered by government and development agencies.'

What if the storm wipes out the available food, and they haven't preserved any?

This man, from the outer islands believed that, 'if the environment is healthy enough, that it can continue to provide for them the way it has been.' He said, 'That, for me, is what resilience is'. He believes that people should put more effort into making the land healthier, so it can in turn help take care of the people.

So, some people have said that when the government steps in, it makes the community less resilient?

Definitely, yes. The chief's family members said that too, that, 'resilience is kind of taking a back step because of government help, you know. The government has officially endorsed the catastrophe - so that individual law - group response rate won't work.' They felt that these days, the past ways of group response, 'doesn't really relieve the people. So, they have to have a national policy, a national strategy.'

Are there other examples of how government actions are being perceived as diminishing resilience, during cyclone recovery?

Well, some talk about how the government actions sometimes cause community tensions, if that's what you mean?

Sure, when government policies are intended to help, but people see it as getting in the way or making a problem.

Well, we've told you already about rebuilding houses, but you know how the chief talked about government giving out food and clothing? Sometimes receiving this type of aid causes conflict among the people. The chief described it this way: 'My area belongs to one province - on one side of the

village - another side of the village is another province. There's a drain that comes up like this, up here. If you stand on that side of the drain, your headquarter is from Suva. If you stay on that side of the drain, your headquarter is from there. It created problems and you see bags of things carried over the drain, through family relations.'

So, this pipeline, it created some kind of administrative border down the middle of the village? And the villagers saw this an arbitrary separation imposed by the government?

Yes, he said that 'It's just one big family. And those that don't have family relations decide,' meaning the people in government positions who aren't familiar with the villages decide how the aid gets distributed, and that 'it causes conflicts and unhappy relations. The government, from outside, cannot really get down to the nitty gritty - oversee the distribution of relief - didn't really touch those who were in need of it. These people shouldn't be given any. It should be given to this side of the drain.'

So, how does the government decide who gets the aid and who doesn't? Perhaps, sometimes, it isn't always so obvious who needs it most?

True, this can be difficult. For example, after Cyclone Winston, on some of the outer islands most affected by the storm many houses were so completely washed away by the sea in the storm surge. One farmer told us that, 'they didn't even have big wind hardly, hardly any wind damage, just like the farm here, but the surge was so big that it came in and destroyed a couple lines of houses.' He explained that the reconnaissance team flew over the island to assess the damage, and it appeared less damaged than it actually was - the disappearance of the houses was unnoticeable from the air. The debris had been pushed so far back that if you hadn't known the houses had been there in the first place, you wouldn't be able to tell that anything had changed.

But mostly, people see the decisions about distribution of aid as influenced by favouritism. The chief's family said that in the village, 'When they see, oh, that thing was taken care much quicker than mine, my neighbour, for political reasons, or for, you know, because you voted for me, those people voted for this government, we'll take care of them first. It creates that, you know – attention, and conflict, eh, in the area.'

Conflict that in a new way that hasn't in the past?

His family was certain of that, 'In a new way that never, ever happened before,' they said.

Another in the family explained that, 'politicians use it for their campaigning. These people who lived outside really got the worst of the hurricane, these people never got the hurricane. And when the thing came, they got the relief. Food rations, whatever.'

But, sometimes the government gets blamed for unequal distribution when it's out of their hands.

Yes, we remember hearing about one particular situation after Winston, in a town that had been badly affected. Some community members were seeing the goods going to some groups, but not their own families. They started asking questions and one community member went to ask for answers. An investigation showed, that some 'advisory councillors - the people appointed in the areas who had records and knew where everybody lived, they were hoarding the stuff - they weren't distributing it yet. They were holding the goods in their house.'

So, the relief goods had been distributed already and it was being bottlenecked at the local level? And meanwhile, the people were angry at the government because they didn't know that the goods had already been brought to the town?

Yeah, the government had already given it to those in charge locally, but it hadn't been distributed out to the families.

But don't people also organise their own relief activities? The government distribution is not the only way that affected communities get building materials, food and clothing, right?

Yes, this is true but, government discourages this self-organisation now. They want everything channelled directly to the central relief fund and they dissuade people from making their own relief efforts and trips to family or communities.

One farmer from the valley of our main island said that, 'banks did appeals and turned it over to the government, yeah, you did see a lot of people turning things over to the government, but those were the individual working appeals at resorts and so forth.'

We heard about one young woman who had grown up mostly in the capital, put together a relief effort for her the family village on the other side of the island because she wanted to do something to help. Her mother told how just days after Winston, before the government had even issued any donations, her daughter started making trips back and forth from the capital to the village. 'She got in touch with all her friends on Facebook. People started sending in! It was immediate. People came with clothes and whatever, money, and she came and then she bought tarps and nails and hammers and whatever, just to cover people and so on, you know. And water and whatever she could, gloves, bread, just for the first meal, you know.'

So, people were still finding ways of helping others, their extended families especially, even though government had been saying to send everything to their centrally administered fund?

Yes, certainly. As the farmer pointed out, 'I think people just ignored that.' As he said, when it comes to distributing help, 'the government has not proven itself all that trustworthy in the past,' and collecting all donations into a central pot 'would avoid duplication, but on the other hand, it would slow everything down.'

Family ties go back a long way, and are rooted in practices when groups within clans used to gather regularly to share their goods, such as fish, salt, yams. As the chief's family described these gatherings, 'It's an occasion to get together, we haven't seen each other for a long time, and we catch up. In the end, it's the communal aspect to survive, collectively, the haves and the have nots. In that, you build the personal relationships. It meets your social, emotional need and comfort.'

So, this is an old tradition and these ties and go back a long way. This could be one reason why people still find ways of helping one another, even against government advice, like the young lady who recently self-organised that support to her family village.

Thank you for these examples of responses following extreme weather events. Part of what I hear you saying, through these stories and descriptions, is that there used to be a stronger impulse from within communities to help one another, or to do for themselves in the wake of, say, flooding or cyclones. There is a long seated and strong sense of reciprocity within communities, and a willingness to help one another. That people used to begin rebuilding without hesitation. But that now, there is a growing mentality amongst people to hold off and not begin their own recovery efforts within the community, because they worry about losing out on money or materials with which to build.

Yes, as the chief's family put it: 'the response by the people, because of this aid, is to sit back and not mobilise. Because if you mobilising and you build your attached house, something you're not going to get this food and all of it. They won't touch it because if they touch it the government won't come.'

And that recently, government policies and practices have arisen, which are perhaps meant to streamline the delivery of goods for relief and to make more transparent the distribution of funds or materials, yet these sometimes inadvertently cause delays. Some government advice furthermore requires that people hold back from organising their own support efforts, including to people who might even be family. This inhibits a natural recovery response. Some of the struggles you have described include what has been seen as unfair distribution of aid, seemingly arbitrary administrative borders that divide communities and families, the requirement of individuals who want to help to pool money into a central fund. You have also given examples where this leads to conflict within communities.

It seems that people's growing preferences for modern materials in part drives this, because they are less likely now to go into the surrounding area and gather materials or food from nature, but some would prefer to get aid from the government. Nobody is saying that this applies to all Fijians of course – there is a mixed response – but you are describing what we might call aid dependency, [16] which some say is a growing trend in the Pacific. [17]

I see what you are describing as some form of breakdown of past patterns within communities – what some might call community resilience [18] – as a result of new relief practices and policies, which are actually intended to help people. This confluence is quite ironic if you look at it this way – that programmes which are meant to help build resilience are in fact diminishing aspects of it.

However, a silver lining that you have shared is that people are still finding ways to support their families – in this case one might say that this act of resilience is actually an act of tenacity or even resistance. [19] Even in the face of these potential barriers, people are continuing to give, to organise and to mobilise relief. In the case of the goods that were delivered to the town but held up in bottleneck, while that was unfortunate, there were people who were willing to investigate.

Yes, and eventually the people who were withholding were brought to account on the matter and the truth got out.

There are a lot of hopeful examples, then. However, it means that people are sometimes finding it necessary to act in defiance, or in opposition, or in disregard of government guidance and perhaps even policies in order to help one another. And there is a myriad of responses to even just these instances of flood or cyclone recovery. It would be helpful to see what the response is like within other island nations.

I'm going to go speak with the Mauritius mangroves and try to find out what the situation is like with them, but I'll come back and maybe we can have a further discussion soon.

[16] (Castel-Branco, 2008)
[17] (Pryke, 2013)
[18] (Tompkins and Adger, 2004)
[19] (Shaikh and Kauppi, 2010)

Mauritius: Citizen-led approaches to environmental concerns

'Whenever I found that I had to raise my voice, well I'm not alone you know.'

In this conversation, the Mauritius mangrove describes a multiplicity of citizen-led responses to the environmental concerns of waste management, flooding and over-development. These include initiatives to increase recycling, waste pickup, and upcycling - all of which have educational components - in addition to two other education-specific projects described. Within this conversation, the mangrove also recounts the story of one individual, who with community, support fought a difficult battle to protect against development plans which were going to be destructive to the seashore environment.

The Mauritius mangrove text is in green. As with the most recent Fiji mangrove conversation, the mangrove voice narrates the experiences of the participants, with their direct quotes embedded and in quotation marks. This mangrove conversation also carries on the talanoa approach whereby my interaction with the Mauritius mangrove is dialogic and my commentary is addressed to the Mangroves rather than a post-conversation analysis. This includes reflections on acting from conviction, fuelled by a duty of care, and how the Mauritius experience collectively demonstrates the role of multiplicity through the citizen-led responses to their environmental concerns.

Just recently, we were speaking together with the other mangroves about environmental concerns. Can you recap what those were for the people of Mauritius?

Yes, what we were saying was slightly different from Fiji and St Lucia who expressed a lot of concern about climate pattern changes. In Mauritius, the concerns we told you about are principally the waste management and flooding, as well as development with its associated environmental impacts. For example, we have seen a lot of siltation, building on marshlands, and coral degradation as a result of development practices.

In general, the concerns you expressed were more to do with human practices that are affecting the environment or that are exacerbating the impacts of natural phenomena. This not to say that other environmental issues like sea level rise and coastal erosion aren't concerns, but these weren't raised as often. The natural phenomenon that is causing a great deal of concern in Mauritius right now is the heavy rainfall, which, when combined with the anthropocentric issues like the waste management, drainage systems and siltation problems, has led to serious flooding and even loss of life.

What are some of the ways in which people have been responding to these concerns?

We've heard about some initiatives which are specifically addressing the issue of waste management. The people are saying, 'Now there are some NGOs and we are introducing the concept of recycling. So, now it's becoming an issue that everyone is concerned about but before that there was nothing done.'

One is an island-wide recycling programme that also does education talks in schools.

Oh, that sounds interesting, how did it get started?

One of the volunteers who works for the organisation explained that, 'The aim was to sensitise people, the public at large to do waste sorting to protect the environment and to use the 3 R's – reduce, reutilise and recycle. So, it started from there and it became a proper organisation, they started getting other members out and getting a marketing bulletin out and sponsorship to place our receptacles.'

Receptacles for recycling? Where are they?

Recycling receptacle in shopping centre, Mauritius, fieldwork photo

Yes, she said 'especially in commercial centres. We have about 30 over the island.'

Oh, such as in shopping centres. And this group organises the collection and actual recycling of the materials?

As the volunteer explained, 'we have sponsors with whose money we managed to get two lorries to do the collection of all these sorted materials. We have receptacles for paper and cartons and for plastic and aluminium cans. They go around to these 30 receptacles and every day they are on the road because they have to service all of these and then go and leave it to the recyclers.'

So, this is in the absence of a collection at home – because Mauritius doesn't have home pickup of recyclable materials – this initiative offers collection sites. But, are there many recycling plants in Mauritius where they can then take the materials?

'Well, for plastics, we have, but for paper we are having problems.' This group sells the material, especially the plastics and paper. For glass, they have a small machine that chops it up and, as she explained, 'this we can mix with cement and you can make beautiful things.' And eventually they want to use a larger glass crushing machine, so they can, 'make it into this fine substance, like sand. It's used on big ships for sand blasting to clean the big ships. So actually, there is a market for that here locally. But we need the machine. We actually do want this badly because bottles are mounting up and we don't know what to do with it. People want, people are asking us what are we going to do with bottles, so there is an interest.'

You mentioned an education component to this program?

Yes, they also do education because what they can manage, 'is a very tiny percentage of what can be recycled. So, we're doing our job of sensitizing people.' They offer cooperative educational sessions with companies and schools.

With all schools across the whole country?

No. She explained that 'they are mostly private schools. Republic schools - we have hardly enough to come to - only one.' In these sessions, they explain to the students what things can and cannot be

recycled and what kinds of things can be made from recycled materials. As she described, 'We show them what can be made out of the plastic afterwards.' And they demonstrate how some of this is being done right in Mauritius, such as a group that takes reconstituted plastics from a big block, 'and makes furniture, benches and things for the garden outside.'

That sounds like quite a big initiative! And there are other similar groups that work with waste management too?

Yes, there is a social enterprise that offers clean-up and upcycling of discarded materials – mostly polluted waste. They operate around the country as well. It was described like this, 'Why we decided to start it was because we were fed up to see the beaches completely polluted with any type of pollution, meaning that you have bubbles, ceramics, glasses, and you have everything that you can imagine except only sand, which is the product that we sell outside. And this product that we sell outside which is white beaches and very nice forest and very nice walking path and all of this. All of this is not the reality, and I've had a problem with selling things that are not real. So, this is just a citizen approach that led to this.'

Ah, by 'sell outside' this refers to the image and impression of Mauritius that the tourism industry is promoting, I see. So, this group works primarily with waste collection on the beaches?

Not only beaches, no: 'We are a collecting agent by our cleaning services and our pickup service at home and our clean-ups.'

And what happens with this material that they collect?

It was explained that, 'when we finish the clean-up we weigh everything, waste and recyclable and then there's a second sorting here,' at their headquarters. Some of the materials get sent off for recycling, and other things stay on site where they make creative objects as a way of promoting the 'reuse' aspect of the 3-r's. They are working with other organisations and providing training to make musical instruments, flower boxes: 'we have more than 4 violins, they are going towards drums, they are going towards other instruments with waste that could have the sound. So, they have been following this training and while doing these musical instruments they will be able to give lessons afterwards or be teachers. Really we are trying to empower them.'

Who is it they are trying to empower?

Their employees. As a social enterprise, they pay their workers, the people who do the collection and clean-up, then they also train them to do this upcycling of materials. Their employees are people who otherwise, by Mauritius law, would be classified as 'scavengers' and would be remunerated for their

services, but this group pays them a bit more, offers training, and is trying to improve the public image of this role.

After the clean-ups, they report and feedback so that, 'the company has got a report of what happened on the day, the company has photos of what happened on the day and the company is motivated in taking care of this environment to be cleaned in a regular manner.'

Ah, these companies are primarily resorts, then. Is that sustainable - to go around and do a regular clean-up service for the hotels?

Ultimately, they want companies to organise it themselves: 'We propose a regular manner of cleaning by employing someone from the place out there. But that will be trained by us to understand why, how, what is being done and hopefully that this person can develop herself to finding different ways of having money.'

Ah, so this is not just a non-governmental organisation, it runs as a business and blends environmental conservation, training and income-generation. Interesting!

There is another project in Mauritius that also works with these concepts – collection, creation, upcycling and training plus income generation. The initiative is run by one person. As she explained, 'It was my own initiative that I initialised it to start training people to start making crafts from waste as fashion accessories or household deco and things like that but not just art but to be useful items, functional items. Ashtrays, necklaces, belts, bags.'

Who does it work with?

Mostly with prisoners and women in rehabilitation and rehousing programmes. With the rehousing programme, she said, 'I approached them and asked if the women and families that they had rehoused had means of income or what the problems that they were facing. With the prison, it's more a rehabilitation approach and also giving them an alternative means of earning an income while they're learning and conserving their environment. As part of my programme we train them on making different kinds of crafts from waste so they can make these things.'

And do people sell them sometimes?

Yes, she told that, 'They organise their own collections and do the production and we introduce them to the market and link them to different market channels where they can sell these items.'

Are they earning a level of income that is sustaining their household, or is it supplementary?

At the moment it's supplementary, but she is working on a website to get products online, and, 'working on various channels approaching corporate companies to local companies to introduce products to them. We are working on ways that we can introduce them to big corporates and make orders for Christmas presents and things like that instead of ordering mugs and keychains and stuff like that from China.'

And there's an educational component to this project, too?

Yes, she teaches them, 'the 3 r's and how it trickles down from reduction, reuse, recycle on a very practical scale.' One of the drivers of this project is that, 'the recycle plants in Mauritius are almost non-existent. With that in mind, how can you reduce the amount of waste that goes into landfill?' The training also focuses, 'on sorting their waste and what they can do with their waste.'

What's been the social impact of this initiative, given that it's working with people in rehabilitation?

She said that with one project, 'within a week of our doing the training they had already cleaned out the entire village for materials to be able to do the projects. From there, other people in the village were asking what they are doing with this, because you will use what you have in the home and then you'll approach your neighbour and say do you have this and that, and take it and they're cleaning out all the magazines and books they have in the home that they've been pilling. Then the neighbours are curious so that's how the group grows. So, it's sort of the end on a small scale but it becomes a sort of eco village.'

So, these are privately-led initiatives. Mauritius is a country which is often put in the spotlight as a highly sustainable and green island nation, especially since it announced its ambitious *Maurice Il Durable* strategy.[20] And prior to this, as the host of the 2005 United Nations conference of Small Island Developing States[21], you will remember that it saw the development of the Mauritius Strategy for the Further Implementation of the Programme of Action for Sustainable Development in Small Island Developing States[22]. These globally-visible activities in Mauritius have been favourable in providing a

[20] *Maurice Il Durable* (MID) was a national strategy announced in 2008 by the Prime Minister as, "the new long term vision for making Mauritius a sustainable island" (Maurice Ile Durable, n.d.). Whilst on fieldwork in Mauritius, the country seemed to be in a period of transition away from a government MID strategy to a Smart Cities development plan and it is now difficult to find further information about MID or what happened to this trajectory.

[21] See UN Conference Website (United Nations, 2005a)

[22] This UN strategy (United Nations, 2005b), a follow on to the "Programme of Action for the Sustainable Development of Small Island Developing States" (United Nations, 1994) was a significant milestone in the sustainable development movement within Small Island Developing States. Concerning this movement of sustainable development within SIDS, I have summarised and published an account elsewhere (Sprague, 2015) with specific attention to the discourses of SIDS 'vulnerability' and 'resilience'.

reputation for being a leader in sustainable development amongst Small Island Developing States, especially at the governmental level.

Interestingly, these examples you have provided are privately-led initiatives that its people have begun out of a desire to do some social good – with or without government support. What I find particularly notable is that people are initiating quite substantial programmes, and taking risks, from a place of conviction and a duty of care. These are not for-profit businesses, or government programmes, but rather they are social enterprises and volunteer initiatives addressing both environmental and social good.

You mentioned earlier that this is a 'citizen-approach' to the problem of waste management. Some might call this 'civil society' but I think the 'citizen-approach' description works really well to name something that is led by individuals who have a connection to the place – they are citizens of this island nation, and they feel a call to respond.

Is this putting any pressure on the government to take up some of the responsibility with regard to waste management?

Yes, some people want the government to do more and one organisation described their efforts of spurring government action. They said that they've, 'been trying to get them to start at local level – we have district councils for the villages and we have municipalities for the towns. We've been trying together to start it on a small scale like at municipalities or at district councils, but nothing yet. We are educating the people, they are waiting, they are aware. So, we want them [government] to start at least give the bins to individual houses or tell people to have three different bins – one for paper, one for plastic and one for non-recyclable things. And then it's so easy. One week the lorry comes and collects the plastic, the paper, you know, and they can arrange themselves. They've got the logistics to do it. But it will take time, I suppose.'

Okay, so coming back to the different ways that the environmental concerns in Mauritius are being addressed. The recycling programmes you described had elements of education and 'sensitisation', but this was a secondary aim of the programmes, with the principal aim being waste management. Are there other projects in the country that lead with an education focus in order to address the environmental concerns you have expressed?

There is a project that operates in some secondary schools to teach sustainability and ecological literacy. It's supported by a Mauritius-based company that liaises with the schools. We've heard some school teachers talking about how it works.

Are these the private schools that were mentioned earlier by the volunteer from the recycling programme? She seemed to indicate that the private schools were doing more in terms of educating about environmental issues.

Yes, this program runs in some of the private schools, the Catholic schools in particular, at the secondary level. The teachers described that this was operating in three pilot schools and that through this project: 'We are trying as far as possible to be close to the environment and assist our students to be aware of their impacts on the environment.'

What are some of the ways it operates?

In one school, they deliver the programme through in-school clubs and out of school camps. As the teachers described it, 'During our activities, we inculcate the knowledge of being caring to our environment, our ecology. We have the clubs integrated for forms 1, 2, 3. For form 1, we have art and craft, cooking, science, botany, agriculture. Term wise, we change the students. In one year they have to do all these clubs. They get the knowledge from each club. This will help them when we include them and take them in our work. When they will be in form 3 or 2 then we will take them for the camps. We go for trips, and every level to 1 to upper 6, we have regular retreats every year where we move from the four walls of the school and concentrate on themselves and see what they can do, each one of them, individually.'

'And the knowledge is across fields. Whatever a student is learning in maths, he's applying it in design, and making the experience in science. Anyone going to the land and cultivating whatever he has learnt in class in the garden, so it's a whole way of learning, simple things.'

So, the delivery is interdisciplinary? In formal schooling settings around the world, school teaching is typically delivered as discrete subjects, but this seems to be an example of a more integrated approach.

They called it 'systems thinking' and described how this makes its way into the different academic subjects, even outside the clubs and camps: 'For all subjects we are analysing our awareness of sustainability issues. For example, when we give a maths problem, we draw by chart a water level, even in science, in design, students are encouraged to do this. Even in business and economics they are given case studies related to water consumption. Through our academic subjects, we are analysing our awareness.'

Right, so in this way, they are directly and indirectly learning and thinking about the environmental concerns here in Mauritius and applying their knowledge in order to understand and address the issues.

Are those pilot schools all doing the same club and camp delivery and then curricular integration?

They said that, 'No, it's a different reality – if you go to another school it's different.'

So how do the other schools decide how to run the program? Are they allowed to decide the structure?

Yes, as they described, 'It was meant to be that way, and there's a lot of sharing during the holidays. This is where we share what we have done and what they have done, and we try to work up something together.'

How is it working in other schools?

Recycling program in Mauritius school, fieldwork photo

In another school, one of the main things they did was a school-wide exercise to determine the ecological footprint. They also have some clubs and do after-school activities associated with this. As one teacher at this school described, 'We started with painting the flower pots, then we shifted into separation of waste where we have hands-on activities, the students stay after school hours and they have gloves on their hands accompanied by two teachers and they separated the waste of the school into plastic, then organic. This has been done for one year. Why we did that because we had to the ecological footprint – to measure the ecological footprint of the school and it was easier for us to measure the plastic waste. Then, as we move on, we have seen that there was many, many plastic bottles at school, so we had a sensitization campaign saying stop bringing bottle at school, bring your own water bottle. And we can say that the number of plastic bottles has reduced enormously. We don't have a bin of plastic. So, this we can say, that they have been changed in their mindset, for example we only we have 5 or 6 [bottles in the waste bin] per week, I can assure you.'

As part of their program, this school also installed rainwater harvesting system and linked it to the toilet system.

Are things getting integrated into the curriculum at that school too?

Slowly, without pushing, yes. The program is sure to integrate the concepts only into the school subjects and classrooms where there is willingness from the teachers. As the teacher described, 'We

spread it in whatever department they feel like they can do it, but it was not imposed.' In this school, there was willingness in the pre-vocational department: 'We have the pre-vocational department did so many things like upcycling. First the idea was first upcycling that we have the mascot of our sports, the costumes were recycled, we had Shakespeare Day for 400 years of Shakespeare last year. There were these guys in recycled material, one gown was made up of newspaper.'

And if these are all private schools implementing this programme, what about projects within the public or state schools?

Some public schools participate in a global campaign. The coordinator for Mauritius said that it operates in 59 countries, so is really large.

Okay, so this is not a local Mauritius-based one like the initiative in the private schools?

Right, as the coordinator described it, 'It is basically is an environmental management system for schools, which incorporates education through the formal curriculum and the informal curriculum as well. It's actually a very simple programme in that any school can follow. Usually it's just introduced nationally and usually it has to be an NGO that sets it up and runs it.'

And how about projects for adults, for people outside the formal education system?

Yes, we are familiar with one group because they do a lot of work on the coast and we have seen them often, so we know of their work. One project they did was to train villagers about mangrove plantation. Another project was what the director called a 'sensitization campaign to the villagers – how to make them become self-sufficient. Not in all matters but at least they can – you know this is a coastal area where there have been many small fishing villages and now with time they don't have enough fish in the lagoon, they have to go out, so we were just trying to inculcate in them the idea of fish breeding, marine breeding, animal breeding, etc., so that they can be self-sufficient at least a little bit. This one did not work well because it needs lots of capital to input into these activities and we didn't get sponsors for that. And from the government it was nil. But, actually they were happy that we had been able to sensitize these villagers.'

So, again, this is a citizen-led initiative.

Yes, and in addition to this, they do non-formal education and involve the villagers in practical trips to demonstrate the concepts. As he said, 'They don't have an idea of climate change, but we have to provide. You know, small pamphlets, and then practical, day-to-day happenings within their surroundings.' And as we were telling you earlier, he explained that, 'one idea was we take them, we went along the beach to show them - because you know you have old people in the village - we asked

them where was that beach previously and then they start showing that it was about 10-15 meters into the lagoon, but it has been eroded with time and now it's here. Then we started giving them practical ideas on climate change. This was a very interesting part of the work and you find that they can absorb this very easily because they can look at it.'

Wow, in terms of education initiatives, there is quite a range of activity encompassing both formal and non-formal learning, and involving children, youth, adults and elders. I see this as a great multiplicity at play here. Across the country, through a range of citizen-led initiatives, there is a multiple pronged approach to reach different populations and age groups to address the issue that people see with waste management – through both action and teaching.

But, it's more than just the sharing of information that is happening. I've heard the words 'sensitization' and 'inculcation' here. I understand 'inculcation' to be something different from education. The way this term is used is more like education or training with the intention of changing peoples' practice or perception with the hope of future action. This is teaching for transformation.

Yes, as one person put it, when it comes to waste management, 'I think one of the solutions is to have proper segregation but for that to happen, there need to be some policies, some law enforcement, but also changing the mind of the people. So, it's an integrated approach.'

To me, part of what you are trying to do is to make a new story about our interaction with the environment in order to orientate future direction. It's more than informing, it's changing people's patterns, habits and practices. The focus is on action – so much citizen-led action is happening!

Yet, what drives this activity? As a small nation at the sharp end of environmental change, does it not simply feel overwhelming to fight this battle?

Let me tell you a story of a man who rallied against the odds to protect the environment, even when the situation looked insurmountable.

He was a man who worked on the water, you see. And he became aware of plans linked with a hotel on the coast, and as part of that plan, people were strategizing to develop an artificial reef. This heightened his awareness and he became concerned. He explained that the hotel, 'brought machines to dredge and make a passage in the sea. They put big rocks which came from the field to the sea to make an artificial reef. I went to see what was the plan, and I found out a lot of mistakes in the plan. In the plan, they wanted to dredge corals.'

To uproot them?

Yes, 'to do the project. And it presented a plan where they did not mention about the coral band. So that was misguided because there was a coral band, but in the plan it didn't represent this – it was just sand, and it justified the dredging because according to them they were not going to destroy the coral reef. Then, I went to the programme and denounced it.'

But he was met with great opposition, because the owner of the hotel was a very powerful person. He explained that 'It was very, very tough. They brought police officers to intimidate to make us run away. Many of our friends ran away but me and another colleague, we stood there and fought against it.'

He persisted with his opposition, rallied others together to take a stand, and eventually he was successful, and the project was stopped.

On another occasion, he opposed a development plan of an entire hotel on the grounds that the plans were faulty, and that the development was going to cause environmental damage. He argued that together with his community of supporters, 'We are for development, but proper development, not destructive development.'

Development of that scale must not be easy to oppose.

He had a phrase, he said, 'We are, like you say, a pot of earth against a pot of iron. We are not strong compared to them.' However, 'the community, everybody was against it. They signed a petition. Everybody signed the petition, it was a local, a national and an international petition. So far, it's freezed, but in the future, we don't know.' So, he keeps trying, keeps rallying others together to keep this project at bay.

How did he find the motivation and the strength to keep going with his campaign?

He said that, 'You know, when I believe something is genuine, I push. Whenever I found that I had to raise my voice, well I'm not alone you know. Still now, the hotel project has not been.'

So, part of his story is about working from conviction, doing what is right, even if it seems insurmountable. The larger story you are telling is one of citizen-led responses to environmental changes. You are not waiting for the government to do something about it, you are going to rise up and address it directly, through your own conviction, knowledge and abilities. You are not waiting around in despair. It's not just a 'can do' attitude, it's a 'must do' attitude. It's a 'will do' attitude.

I see parallels of this with the wider global effort to make changes in the face of climate change. The IPCC reports on climate change can feel devastating. Part of this effort to make a New Story of the way we address environmental changes - what you are demonstrating, in my opinion, is the feeling of

a duty of care. Even if it feels impossible, people act anyhow, out of a respect to the Earth, perhaps, or a respect to your fellow human beings.

Sometimes, in a multiplicity of responses - like those you've described here - initiatives can begin to overlap, and maybe there is a way to be more 'efficient', but in some ways maybe 'efficiency' is not the point. Heartfelt response is the point. Not response from fear, but again perhaps from a duty of care to the Earth and to one another.

Multiplicity will persist so long as it fills an existing need. A multiplicity of responses tends to rise up when an initial need is felt or an initial opportunity arises, and at the outset many responses may be generated to address that need. When the need is satiated, a natural atrophy will take place, either as a decline of responses or a merger of multiple responses into a fewer number of mutually reinforcing responses. Right now, there seems to be a perceived need in Mauritius to address the concerns over waste management in particular, and education being a major part of this. There have been multiple approaches, many of them citizen-led initiatives to meet this need.

This response can be likened to a rhizome in itself – and like your very own mangrove roots – with multiple strands, sometimes overlapping, other times starting and stopping and picking back up again, twisting and turning back on itself at points, but all contributing to one growing organism.

Mangrove roots, fieldwork photo

Mauritius mangroves, you have shared multiple types of citizen-led action which are supported or supplemented by learning. Thank you for demonstrating some of the things that can be learnt from islanders about facing environmental change, including the importance of acting from a duty of care and raising up multiple approaches to address environmental concerns.

This has me thinking about some of the things the Fiji mangroves said earlier about types of knowledge. I'm going to go back and ask some more questions of them.

An Interlude with Dogfish Woman

Bill Reid's Dogfish Woman (Qqaaxhadajaa) Image Source: https://www.sfu.ca/brc/imeshMobileApp/imesh-art-walk-/dog-fish-woman.html

On my way to the Fiji mangrove, something stops me. A slivery flash in the corner of my left eye catches my attention. It's Dogfish woman, from the Spirit of Haida Gwaii. I feel compelled to go speak with her, to seek her wisdom before continuing on in the mangrove.

'Excuse me,' I say, approaching gently, 'Dogfish Woman, remember the leaves you brought here on shore when we met earlier?'

'Yes, I collected them as I approached the island. As we got closer to the shore, we spotted more and more of them in the water. Some of the others in the boat noticed that they were somehow inscribed. I was curious about this, and so I scooped a few of them up to read what was written on them. They were messages about resilience. Do you know much about that?' she replies.

'Well, I'm trying to understand it better, yes. And in fact, I'm a little shocked by something that I heard in the Mauritius mangrove recently about it. Maybe you can help me to air it a bit and try to understand what it means,' I request.

'I can certainly try. What happened?'

'Well, I was asking about the ideas of vulnerability and resilience in the face of environmental change. We were discussing how islands had been referred to as 'vulnerable' for many years, but that recently, they started to be referred to – and in fact started referring to themselves as 'resilient'. I was asking what brought about this change, and the mangrove commented that, the international development community had to sell SIDS the concept of vulnerability before it could sell them the concept of resilience.'

'Like a commodity?' she asks.

'Well, yes, like a tradeable concept,' I reply.

‘And you’re surprised at this? Because you had been thinking that resilience was a concept that grew here naturally?’ she inquires.

‘Maybe not the kind of resilience we find in global development speak, no.’ I admit. ‘That is a mechanism of internationalisation of thought, of conceptual sharing and borrowing that brings these things along.’ I try to clarify, ‘I asked the mangrove if the definition of resilience that gets used with islands is something from the island itself, and the mangrove specifically said that, “basically, the definition of resilience was taken from existing literature.”’

‘Oh, you mean there are different kinds of resilience?’ she questions.

‘Well, yes, perhaps different ways of understanding it or demonstrating it,’ I continue, ‘Resilience as understood at these global conferences, like the one that was just had here on this island before the storm came in, that kind comes from borrowing.’

‘You mean, like transplanting?’

‘Well, in the better cases it’s like a blending from here and there, but yes, sometimes it’s a straightforward transplantation.’ I admit.

‘Surely you don’t mean that the mangroves aren’t resilient on their own – that they have go get resilience from elsewhere?’ She interjects.

‘No, definitely not. You’re right, they are highly ‘resilient’, the mangroves. It’s just that the way global development talks about resilience, this is somehow a different kind. It’s measurable, it’s mandated from outside. It’s somehow a different species than what’s present here naturally. It’s a different way of understanding it, it’s somehow more prescriptive, maybe more narrow, if such a thing exists.’

‘Then how did this kind get here?’ Dogfish woman asked.

‘Well, I suppose it arrived on the waves of Sustainable Development and other concepts that circumnavigate the world via global communications and global development processes and pressures. In education policy terms, some refer to this kind of conceptual movement – and it’s not just concepts themselves that move, but also the related policy directions associated with them – as a kind of transfer, and other refer to it as less a kind of movement and more a kind of translation.’

‘Thousands of year ago these kinds of concepts travelled with people in boats…Like the Spirit of Haida Gwaii,’ she reminds. ‘But now?’

‘Well, now these things travel over the ether, or on the ‘airwaves’ at the speed of light via conference calls, emails, websites, and at global conferences like the one just held here on this island that resulted

in the leaves you brought with you form the Tree of Resilience. This might or might not become part of the New Story – that is yet to be seen. But what is certain is that the Resilience on those leaves – that tree is not endemic to this island.'

'I think you need to keep asking more questions,' she suggests.

'Yes, I need to keep trying to understand HOW resilience is – how it's manifested, rather than what it means as a concept, and not get too fixated on the definition of it. The execution of resilience – as a human capacity – has been here for ages and ages. But this resilience of global development, that is somehow a new species – the measurable, mandated resilience…' I drift off, not sure yet how to articulate this clearly.

'Just keep listening,' she encourages. 'Just keep listening.'

I agree and, while perplexed, and still somewhat shocked by the admission of the Mauritius Mangrove, decide not to fixate too much more on this for now, but rather to go back to the Fiji mangrove and keep listening for more ways of understanding.

Fiji: Blending the 'knowings' for a New Story

'Different traditions from different places, yeah.'

In this mangrove conversation, we are back with the Fiji mangroves. The style is again slightly different here to make a more free-flowing conversation, getting yet closer to depicting a talanoa discussion. To facilitate this, less detail is provided by the mangroves regarding the speakers of the direct quotations (ex. a farmer, a chief, etc). As with the other conversations, however, the words in quotation marks are directly from participants and are blended here into one discussion.

The focus here is about different kinds of 'knowings', to include: knowings of why, knowings of creation, mysterious or mystical knowings, knowings that are partially submerged, knowings of doing, and knowings from outside. The conversation explores how these can be brought together to contribute to a New Story, as expounded by stories of knowledge blending in the domains of construction and fishing/no-take practices.

What I'm gathering from our conversations so far is a multiplicity of knowings**.** And my sense is that through the blending of these knowings comes a certain strength - what some might label 'resilience' - particularly when dealing with the changing environment.

You've told me about some of the knowings that are steeped in oral tradition, what others might call indigenous knowledge. These include the knowings of why. In other words, why things are the way they are, and why people do the things they do. Like the tale of Ravuvu the dart thrower that you shared earlier, which explains why the conch shell is blown in Joma after the floods which bring the logs from the hills down to the seaside.

There are also knowings of creation. One such as folk tale I've read is about how Rotuma was created from dumping baskets of Tongan soil into the sea by a Samoan chief.

Yes, the story goes that chief Raho had a granddaughter, Maiva, who begged him to take her away from their Samoan island in order to get away from her taunting brother. These two set out in a dug-out canoe, and when far from the shores, the Samoan soil was tossed into the sea, where, as our storytellers describe, "Instead of sinking beneath the waves the Samoan soil grew and grew, until at last it was one large island, nine miles in length, with hills and valleys and wonderful beaches, with coconut palms waving in the breeze, and luscious yellow oranges growing in groves … Raho called the place Rotuma, and this name has remained during all the years that have followed… The descendants of Raho and of his grand-daughter Maiva are a happy people who owe their beautiful island home to the courage of Raho, the chief of Savaii, and to his beloved little grand-daughter Maiva." [23]

Other knowings are mystical or mysterious, but beneath them is another logic at play, another knowing, which is not always visible – one that is partially submerged.

Aah, like telling children not to play outside at the stream at night because the spirits live there and will get them!

Or warning young lovers not to meet up at the water because the spirits will eat them, eh?[24]

Mangrove roots submerged at high tide. Source: Public Domain, US National Oceanic and Atmospheric Administration https://commons.wikimedia.org/w/index.php?curid=142126

[23] As told by Reed and Hames (1967b, pp. 49–51).

[24] These both come from synopses of folk tales and anecdotes as told to me while on fieldwork, but for which I have no transcription, nor have I been able to find in Fijian folk tale collections.

Yes, exactly! In these anecdotes there is a mystical or mysterious knowing that is accepted, but which has a rational backing. Perhaps there aren't actually spirits in the water at night, but telling this to children may have been a way to keep them from lurking where other physical dangers existed which they might otherwise think they are capable of evading.

Mangrove pneumatophores arising from the seabed. Source: Shao/ Wikimedia Commons / CC-BY-SA-3.0

And, like a mangrove, some of these knowings are more hidden than others, like parts of yourselves: your branches and leaves might always be visible, and your tendrils are frequently submerged by the tide. Meanwhile, your deepest roots are not exposed until they emerge as lines of flight - pneumatophores popping up from the seabed, not unlike a rhizome.

Submersion of knowings may traditionally have been an act of safeguarding.[25] In the past, knowledge has not always been available to everyone, but safeguarded by chiefs or elders. Yet that orientation is changing now, coinciding with the development of the New Story of human interaction with the Earth.

In this way, there are knowings that are partially understood yet partially submerged - like reading the signs of nature. You gave the example of overbearing fruit trees as a sign of a forthcoming storm.

Yes, overproducing breadfruit trees tell people to get ready for a tropical storm.

This is a knowing that is rooted in traditional knowledge, an awareness that seems to be falling to the wayside, nevertheless one which has historically been an important warning. There is likely a very sound biological reason for this liked to ecological principles. But when passed down as traditional knowledge, based on centuries of observation, it is not always necessary to understand the hidden meaning when the visible or mystical knowing carries enough weight for people to pay attention to it.

Then there are the knowings of doing, as in how to do practical things of building, preserving, recovering. You've shared plenty about the ways in which people have traditionally gathered foods, either before or after storms, and how they've rebuilt in the wake of hurricanes.

Yes, but much of the traditional practices are changing because of outside knowings and methods that humans are using instead.[26]

[25] (Nabobo-Baba, 2004)
[26] A concern expressed during informal tanaloa conversations while in Fiji, fieldnotes.

Right, there are knowings from outside - a constant introduction of new knowings. These might be discarded, taken up as replacements of past knowings, or integrated with existing knowings. Of course, islanders have always been introducing new knowings to their own existing knowings. With a history of constant movement, islanders have both been moving, and have been descended upon, for centuries. This type of movement and knowledge sharing, which still applies today,[27] is the wave on which new knowings appear, and part of the concept of the Sokota.

We haven't talked much about this sort of new knowing yet, the knowing that comes from outside, either from traditional knowings of other places, or even from more modern science and technology ways of knowing.

I wonder if you have stories that you can share about using this form of knowing. Or perhaps more importantly, stories about the blending of these different kinds of knowings. From my vantage point, the strength is to be found in the blending, in this multiplicity. Such blending might even function as a kind of resistance to the force of replacement by a new knowing in favour of an approach that values the existent knowings; a retention of the wisdom from them and blends in the new knowings.

Well, we've started talked about rebuilding homes after cyclones. And how in the traditional knowing, this was done by collecting materials from the land and working together to fix the damaged structures. Traditionally, these were bures. We used to see more of these on the coast, but people hardly build this way anymore.

Ah, so the traditional knowing – the knowing how to build these structures, is in the construction of the bures. Are there people who are interested in revisiting this building know-how?

Yes, there are people who 'are convinced that we should go back to wooden houses in islands, that concrete buildings are not really that durable. After 20 years they begin to fall apart, so it's the best that we go back to the wooden houses across the Pacific now.' Some are building bures as a means of demonstration. 'Sadly, a lot of people today would not know how to build a bure'. And some 'want to have a demonstration about a bure just to continue to teach the young people that this is important.' Complete with the traditional lashings and 'everything has to be taught, otherwise…'

Yes, I see what you mean, otherwise it will be forgotten.

[27] As argued by Pacific scholar Nabobo-Baba: "Today peoples of the Pacific have continued to 'canoe' around the world, largely to Aotearoa, to Australia and to North America. It is in our bloods to do over-sea travels (by air as well), to unite and re-unite, to group and re-group. From these travels we build our strengths and capabilities of living in the world, as well as reminding ourselves of our various linkages. This is our common heritage." (Nabobo-Baba, 2004, p. 17)

'In Solomon Islands, too, these people have been talking about how the bures did so much better, but there aren't that many of them left anymore. Because the people aren't using them anymore.'

People are worried about these types of traditional skills being lost and abandoned. And not just bures, but also other building skills and structures, too.

Right, you mentioned that earlier, about the bridge that the government replaced for one village, which is built from materials that they would not be able to replace on their own.

Yes, the bridge in one village 'got washed away after about 20 years, washed away by the floods. Luckily, some of the elders were still around. They had to reteach the boys, the youth, cause when they were told to collect the materials they were collecting the wrong ones, because their whole life – it was just their first, because they were 20, thereabouts.'

Traditional Bure, campus of The University of the South Pacific, fieldwork photo

It would be nice to keep the traditional skills alive, but traditional structures aren't necessarily resistant to hurricanes.

Right, but bures are designed 'like a basket…the posts fall' and the walls and roof slide down closer to the ground, covering people inside and when the storm is over, 'with a cane knife, you make a new door – and that's where you live, it's a temporary shelter until you get things fixed.'

So, maybe that's the point – to build things that you can recreate on your own from the natural resources available, rather than to build things that will last a long time. Because with the alternative, the concrete walls fall down and crush people, and neither can you rebuild them from the natural resources available on the island.

But with the storms getting stronger and more frequent, 'how do you build back a traditional building when all of mother nature has been smashed? When traditional buildings rely on bamboos that are shattered, and palm leaves and thatch that's all shattered? It's easier to buy tin – especially what if the relief agency is giving roofing iron?'

Eh, but the tin roofing they use with concrete buildings flies in the storms. Remember when the coconut tree on our shore was damaged that way?

Yes, after Winston, 'it was the roofing iron that told the story, you know. They were wrapped around the mango trees, they were wrapped around the coconut trees, they were just, I mean they were like foil.'

'In Vanuatu, where Pam[28] hit, they had a traditional building, it was an A-frame, the poles were like an A. Those did so much better than these new modern ones that have walls. The Marianas had A-frame buildings and in Guam they used coral stones … and they actually had big A-frame houses, and so the A-frame houses are an adaptation to cyclone areas, it looks like.'

That's a good example of a way to blend the knowings – the traditional knowing of how to build bures and other home structures of different configurations – from a range of different places. Blending these traditional knowings together to make stronger structures in the anticipation that the hurricanes will continue to get stronger and more frequent.

'Different traditions from different places, yeah.'

Right, by introducing other techniques from other places. By blending traditional know-how from here with traditional know-how from elsewhere.

'So, if you're going to go with traditional materials … then you're going to have to think about how can you make those traditional materials not get compromised, their strength.'

'Somebody came here from central America … they do adobe buildings' and some people have been blending that with local construction by mixing local clay with sand, 'and it sticks a thin layer, and it doesn't crack, and we need to put it into the traditional bures to plaster the outside of that, and it'll make it stronger, more rot-proof.'

Can you think of any other examples of this kind of blending local traditional knowings with the knowings of elsewhere from outside? Perhaps in domains other than structural building?

There is the tabu areas on the coasts which have made a resurgence and are based on traditional knowledge and practice. This has been blended with outside scientific knowledge of fisheries protection.

And this is linked to an environmental concern for Fiji? We were talking earlier with Mauritius about stress on the reefs, due to environmental change and global warming. This would mean that there are fewer fish in general, since the coral is a main habitat for them.

[28] 2005, Severe Tropical Cyclone Pam, which was 'the second most intense tropical cyclone of the south Pacific Ocean in terms of sustained winds and is regarded as one of the worst natural disasters in the history of Vanuatu.' (Wikipedia, 2018)

'You can't really pinpoint the source of the change but fishing certainly rates as a major cause and then there are things like alteration of habitats and coral reefs are beginning to feel the impact of all these years of use. And for these coastal communities they are reliant on the sea for supplements'.

For their protein sources, you mean?

Yes, that 'basically comes from the sea.'

And I understand that there has been a problem with over-fishing as well – not just stock reduction because of coral depletion?

An 'increasing number of people are willing to sell their food sources. If they lose their food sources from the marine environment, that's it. You're totally dependent on the market.'

So, how has it been addressed in Fiji, and how have different knowings been blended to deal with the situation?

'The initial engagement was basically for the protection of food sources. And we relied on the customary practice of 'no take' for that period of time.'

So, these no take or *tabu* areas, I've heard of them before. You call them 'tambu' areas – like off-limits fishing zones in coastal communities, yeah? And this has been one way of trying to restore health to the reef and the fish stock, and boost food security?

Traditionally, 'the concept would be that somebody dies, so you close the reef. You close it for 100 nights, and then that would feed the party. And if a chief dies, maybe you would close it for a year at the most and then that would feed the one year when you establish a new chief.'[29]

Okay, so this was a traditional practice whereby a particular area of the reef is designated a no-fishing area in order to conserve the resource there so that people could be fed on the commemorative or ceremonial gatherings.

Yes, it 'usually was associated with death, or a ceremony of the shark god or whatever, you'd do a ceremony every 10 years, and they would close something, but the sacred reefs were opened again one way or another and the tabus were basically stopped.'

And for a while, this wasn't popularly done, it was a local knowing that was dying away, but was reinstituted to address the issue of depleting fish stocks?

[29] These social practices are now well documented. See, for example, a full description of 'tabu' on the website of the Fiji Locally Managed Marine Area (LMMA) Network (2016).

'In 75, mid 70s there were no tabu areas that I know of anywhere in Fiji. That was the old way of doing things. Then in 2000 there was a push for no-take areas.' There were 'workshops here and we had old people talk about the old management and how they would put tabu. In 1999, 2000, we established 5 tabu areas here. The first tabu areas on the coral reef in modern history in 40 years probably.'

But 'for a longer time period. Some communities after 10 years open it up.'

So, this traditional practice was modified and applied in research projects to programmes addressing the environmental concerns on the reef and fishing areas?

'So Fiji, and the South Pacific invented the whole concept of NFA or No Fishing Areas, or no-take zones, which is considered a revolution in management of resources. They've been practicing it here for thousands of years.'

'A couple of the NGOs were starting working. Now, there are over 100 tabu areas. It's become a regular thing that you can't fish there. 80% of all the reef areas and coastal areas are under local management, locally managed marine areas - LMMAs.'[30]

Oh, so you took the basic principle, the local knowing, and then elongated the no-take time to suit the needs of the fish stock rather than the time frames that were traditionally held in association with ritual or celebration. And are these initiatives supported by the government?

'The only protected areas at the moment are all in the inshore or near shore areas. Government has not designated any of more than 1.3 or 5 million square kilometres as a protected area. The only protected areas at the moment are ones being declared by communities because they are mindful of the challenges that the future is expected to bring and what is happening at the moment.'

I can see how people might have readily taken it up because they recognised it from traditional practice and applied it, with different parameters, did it for longer based on scientific principles from outside. This is a good example of blending different knowings: local knowing and traditional practice blended with scientific knowing from outside to create a new form of practice that helps answer the needs of the uncertainty around climate change and food security.

We've covered a lot of ground in this conversation, including a multiplicity of 'knowings'. These moved from the 'knowings of why', 'knowings of creation', 'mysterious or mystical knowings' and 'partially

[30] Work such as this on LMMAs in Fiji is well recorded in the academic literature and include descriptions of integrating traditional practices into marine management (Cinner and Aswani, 2007) some of the success and challenges of doing this in Fiji (Jupiter and Egli, 2011) and the challenges of integrating this into law (Clarke and Jupiter, 2010).

submerged knowings' to the concepts of 'knowings from outside' and the 'blending of knowings'. I think this can help us in the development of a New Story of humanity's relationship with the Earth, which, in order to serve as a story for all of humanity will need to incorporate different forms of knowing that are recognisable to many peoples while simultaneously incorporating new knowings that can address the current problems we face as a collective humanity. Our basis of knowings from which to draw upon in our rewriting of the story of human interaction with Earth continues to widen in scope.

So, how do we begin to share all of this with others?

7. Mangrove Messages

'Don't wait to do your part.'

This is the last mangrove conversation and includes all three countries. This narrative presentation shares the findings of the project's third primary question about the messages that islanders wish to convey to themselves and others regarding the actions which need taking in order to address their environmental concerns. Quotes come directly from participants from ***Fiji, Mauritius,*** *and* ***St Lucia****, but here, the style of dialogue returns to the format of the earlier discussion with mangroves from all three countries about their pressing environmental concerns. As with the earlier three-country conversation, the quotations are longer and are put side by side one another, with less attempt to shape a completely smooth conversation. This approach serves to provide as many messages as possible rather than to present a seamless dialogue.*

Through this conversation, the mangroves articulate messages they wish to share with their own citizens and governments. These range from the need for planning and strategies, the limitations of government, the need to work together at many levels and the role of education and traditional knowledges for islanders. We then hear the messages that they wish to express to other nation states and people outside their islands, including the use and adaptation of traditional practices, increasing youth and householder consciousness and participation, global environmental education and acting on global emissions. As I the previous three country conversation, while artificial to the conversation, these topical headings are inserted into the conversation to help delineate while reading.

We've been having some separate conversations for awhile now and I've learned a lot about how islanders in Fiji, Mauritius and St Lucia are responding to the changing environment and addressing the environmental concerns you shared earlier. I believe that there is much which others can learn from your early onset experiences of environmental change, as island nations are some of the first to have to deal with these many types of varied pressures in such extreme ways. Sometimes, this position is called the 'sharp end' [31] because you are at a point of exposure which is more extreme than many other larger states who do not feel environmental change in the same acute ways. You've already articulated some of your concerns and some of the responses to the pressures of the changing environment.

Especially because, as Dogfish Woman has explained to me, all the tracing leaves on the Tree of Resilience have been blown away in the tropical storm, we have the chance to instead develop a new mapping of responses to environmental change, so it would be especially valuable to hear your thoughts about what others can learn from your experiences. What messages do you want others to gather from your experiences and what you've shared thus far? These might be lessons from your successes, or equally they could be learnings from your challenges and difficult encounters.

Messages for fellow islanders and governments

Need for planning & strategies

'I think that it's important that for Mauritius we have a national strategy for sustainable development. This is helping us a lot because we can have some responsibility and the various protocols, for example the Koyoto protocol, but all these need to be aligned and to. Yeah, with the national strategy for sustainable development, it's easier.'

'I think for me one thing that Mauritius needs help with is to really first of all understand that there's a need for planning.'

'The country needs better disaster risk management. At present, it's crisis management rather than forward planning.'

And you see planning as a separate thing – and a need – in addition to policies or strategies?

'There is no planning in this country. Anybody will tell you that there is no planning. You come and show me a document today that tells you in 2030 this is what we are going to be. There's nothing.'

Okay, so you are raising a message that perhaps you'd like to share within your islands – to your governments and citizens – about how to continue responding to environmental change. Let's explore

[31] For 'Sharp end', see Cabot Institute, 2014; Louisy, 2014; Sprague et al., 2014.

that space, then perhaps later you can share some messages for those outside your islands that you'd like to impart.

'Secondly, develop an institutional architecture to allow planning to properly take place. Then it's the whole capacity building of putting in place the planning tools that can be used for different uses. Like, for example, budgetary planning tools are not the same as long-term planning tools. It depends on what you want to do.'

How about other areas where national strategies or planning is desired?

'So, in my experience, what we can do by introducing a sort of national framework for education for sustainable development is we can help schools and governments to understand what are the resources available to us on this island to tackle, or give advice on the challenges we are facing, and then to work in a thematic way so that they can actually take action using the best information and advice from experts that they can.'

Right, so that's a desire to see a national framework for ESD. So, for Mauritius, there is a desire for more strategy, frameworks and planning on the government side.

What about you, St Lucia? What would you like to see on the government side? For example, if you were to make a policy priority to address some of the concerns you've identified, what would you do to make a difference?

'First thing I would have done would be a land use policy.'

Particularly for you as mangroves? What needs to be protected most?

'Upper watershed. The problem here is that a lot of the land's privately owned. The government, in the upper watershed, has a limited amount of land. So, people believe "it's my land, I can do whatever I want with the land" and that's not what it should be. All these persons have to change these perceptions. Land tenureships are things that should be taken real seriously. Because when you have a lease on the land, that land is not yours. You just have a right to use that land for one generation, so when you die, your wetland is still there. There are limited land resources. We are not like America or Brazil or them big countries there. So, I would have zoning, this is agriculture happening there, tourism here, protected areas. First thing I would do is a land use policy and a system of protected areas with areas designated where no development can take place.'

Okay, so that's one message for government, to have a land-use policy that includes zoning for designated non-development areas.

'I want to make the point I want to see a more active, proactive role of the authorities. I'm not going to say government, but the authorities, and some of the major stakeholders in our economy to kind of instigate, initiate and institute actions that have meaning in our fight against, in our attempt to combat climate change.'

'There are several things we can do, but the biggest issue is: are all the persons – the authorities as you'd say – who are capable of making these things happen, having the right discussions with the right people off the table so that when the decision is made on the table it's for the benefit of all?'

Okay, so you'd like to see development of new land-use policies, and more proactive authorities. Other areas of concern that you'd like to flag up? Things that the government is moving on that you'd like to see special attention given to?

'Reconciling ecology and economy. You build 100 KM of road, you are happy with this, but they are not looking at how much you sacrifice for that - what the consequences may be.'

'They have seen that in fact environment is the wealth, it has its own values and it's not only crying, saying that the trees are being dilapidated, we're losing the biodiversity - they are seeing that we can make something out of it and this is very exciting to me.'

'Especially now, there's a thing that the government started, called the blue economy, they're going to start that as well. So, maybe when they start this, they should do it kind of ecologically minded, I hope so.'

So, the importance, as you say, of reconciling ecology and economy is an area where it seems likely that the government will have to get involved in careful consideration, especially with this new way of seeing the ocean as economy. What about in Fiji? Do you see the need for more policies or planning?

Limitations of government

'I think, like every other government we have too many strategies – these are not good lessons – too many strategies and the limited capacity, resources within the government itself to regulate, to effectively enforce legislation, to implement strategies has always been there.'

This is an interesting point. It seems that are some regulations in existence that would benefit from being enacted, but for some reason or another are not enforced. For example, I know you have had an interesting experience in this regard, St Lucia. You have said that you want authorities to be more proactive. For example, I know that you've tried to initiate a project on the south coast to reduce

littering and through this experience, you discovered that the authorities are not enforcing particular laws that would benefit some of the environmental problems here.

'I was told there's nothing that they can do because there's no litter law. I found it was strange, you know, when they said there is no litter law and there's nothing they can do for people littering and so forth. So, I went to someone about the matter, I told him. "No," he said, "who said there's no law? Yes, there's a law, there's a litter law." So, we went to the police station and he asked for a book, a law book, he read from it, he said, "There you are, which policeman told you there's no litter law?" I said one of them, I'm not sure. He said, "There's a law and they have to enact the law". The law is not enacted, but it has to be done, and it's true. But this has never been enacted, nobody's never done anything, people continue to break the law by littering, throwing things out of the bus on the wayside. Until the authorities decide to enact the law, and make it law not to litter!'

But this highlights an interesting point – that there are limits to what the government can do, and also to what the authorities can, or will do. What can non-government entities do, or what would you like to see them doing, in order to continue facing the environmental concerns you have raised in our conversations?

Working together at local, national, regional and south-south levels

'I would say that there seems to be on this island a lot of activity within a small space, different organisations are working in different areas of climate change or sustainable development, but not necessarily working together. But then, the potential of them working together is quite huge because they can individually tackle the different challenges and different community challenges and social challenges and environmental challenges.'

What could help with that?

'It's collaboration, it's integration.'

'If there is a simple national framework for Education for Sustainable Development, you can ask schools themselves to understand and assess their own risks in the way that speaks to their own culture and involves community members. Then they can involve parents and grandparents and religious leaders if they want to, as well as environmental experts and organisations. Then they can treat their own challenges in their own ways.'

'We have a number of apiculturists in St Lucia and they're not talking to each other. And the idea is how do we get them to talk to each other, how do we get them to sell to each other? How do we get St Lucia - that's doing charcoal production at a very high efficiency rate and producing biochar and so

on - to become the producers of charcoal for other communities that are using it for community events?'

And I suppose not just at the community or the national level, but the wider regional level as well?

'How do we create links at the community level and maybe at the regional level and the south-south level?'

'So Small Island Developing States have to develop more communications, more relations and so on. So, one of our global objectives is the south-south – more south-south communications and collaboration.'

'We have our own governments, but in terms of coming together as a united front to up our stakes in trade, the last one I really remember was with bananas.'

Ah, in terms of joining together to trade as a more powerful regional unit rather than as a single state, sure. That's an example of collaboration for food trade. Are there other areas where you would like to see similar tools of collaboration put into place?

'Recycling. There are already recycling plants established in the Caribbean, but one thing I would wish is that the Caribbean states could be a bit more connected. We had the Winward islands, the boat going around picking up people from different islands.'

Ah, yes, the ferry, which was for passenger transportation.

'Why aren't we doing that with more things? Have a ship going around the Caribbean picking up recyclable materials, putting transport to different countries where they can be processed and when the ship's coming back it can transport food that we are trading.'

As you say, linking up like this within the region is possible, and can be done to help address environmental concerns. That requires a lot of communication and collaboration in order to make community-to-community or regional initiatives like this possible.

'That's why knowledge management has become so important for us now. How do we integrate knowledge management into what we do? Not only the document, you know? The documenting the synthesising, the packaging, the communication, and so on. All of those things are important to us. And that's why we collaborate with the college. There needs to be a thrust to get them out of their citadel of learning up there to what I call the body of reality, you know, so that they can contribute.'

The role of education and importance of traditional knowledges

Speaking of learning institutions, Mauritius has already mentioned wanting to see a national framework for ESD in Mauritius, and of course, has previously shared some of the educational initiatives happening on the island. Fiji and St Lucia, what wishes do you have in this regard?

'Environmental education, that is something that is probably lacking. For example, pesticide use - a lot of farmers, when they use the pesticides, they find they get more production, but they don't adhere to some of the pesticide labels and stuff. So, you can see, it's something that yes, you do something here, but it can have implications for everybody.'

'But environmental education needs to start from the schools. Environmental education should be a major subject for students.'

'For me, personally, I would really like my grandchildren to understand, to prepare themselves for these weather changes, to understand that these changes are happening, but to prepare themselves as the traditional did. You know, take some values from those lessons and super-impose it on today. And in the future. Cause I think that's a real amazing example the traditional preparation for it.'

So, some return to and re-learning of traditional practices. That's not just the formal education, but other forms of learning, which might take place in or out of schools. I suppose that is applicable to farming as well?

'All these things, the technologies the farmers use, that's a problem. They're used to talking about modern technologies, but they cannot really tell you about the impact of them. You will find a lot of new technologies that have been brought in, and all the indigenous ones they've been pushing aside. Those that came from overseas that we are adapted to, those are the ones that are more problematic.'

'Well, I guess, basically it's going back to where we first came from is traditional knowledge. If we had kept staying with our traditional knowledge, um, it's a way of how you can better prepare ourselves, like in terms of climate, food security. Yeah, I guess it's just basing it, traditional knowledge is very important and not everyone knows how important it is – they don't know how to value it.'

'Yeah, I think most Pacific Islands should just go back to the traditional. Everyone's sort of just westernised. So, I guess, yeah, making use of our resources, because we have an abundance of life.'

How can we summarise these wishes and aspirations for your governments, authorities and citizens?

'So, for me, planning, communication, and knowing that whatever we do, it's not for us, it's for the generations to come. So, we need to set a platform, a foundation that the next generation can use,

and move properly because they'll blame and say, that's what, you know, my father, that's what these guys left for me.'

Messages for those outside the islands

Use and adaptation of traditional practices

That's great, how about the lessons which you think can be learnt by people outside your islands? What can others learn or try to better understand?

'Well, you know, basically it's learning from the experiences. Look at the traditional methods there and perhaps you can refine these and develop and with the technology we have around. You talk about breakwaters, you don't need to import anything for a break wall, it's just a matter of moving rocks maybe, and just creating barriers. Now, you may need to have a big machine to do it now, but in the old days, they simply rolled rocks down, or used bullocks and so on, but things like that. That can be done, you know, anytime.'

'Proximity to nature, and perhaps even understanding of some traditional knowledges that are now being resurfaced as a result.'

'I think it all comes back to traditional practices. I think it's all the same throughout the Pacific. Because we have been living through traditional practices and views, and so this carries weight through the whole process. And I think that's one of the ways Pacific islanders are strong. Mainly, if there's no fish, like if there's no food as well, there's no manufactured ones, we know how to go and catch a fish, and the coconuts or firewood. There's no stove, we can use the firewood, just cut down and then it's easier.'

Okay, so, one of the things that you want to share about your own experience is that part of what makes you strong in the face of these environmental challenges is your daily proximity to and closeness with nature, plus your awareness of traditional practices. I think that a lot of societies, or parts of them, have lost touch with this. For example, heavily industrialised communities or people living in cities. With global population growth and urbanisation, things like proximity to nature might not be possible for some people, but they could perhaps become more aware of traditional practices elsewhere and blend the knowledges to apply in their own situations, like you have pointed out.

What other things can you share with people? What else has been part of your achievements in meeting the challenges of a changing environment?

Increasing youth and householder consciousness and participation

'Getting young people's voices into the national, regional and international decision-making forums. Climate change needs cooperation of everyone, young people, women, elders, everyone, so what our

main has been to change that mind-set. Getting their voices to the decision makers of our country, those that make the policies has been really difficult because the traditional mind-set in the Pacific is that the elders hold the knowledge. We've been taking small steps to get young people more confident enough to speak in those forums, exposing them to different forums, teaching them, okay, this is how the decision is made at high-level meetings, with the national- level, the regional and international level. And then when young people see what's happening and then they come and voice out that's when they're able to make their voices heard. In Fiji, we're trying to get young people's voices included in the national policy making levels, whatever the government does. And I'm happy to say that the government has now opened up. In the beginning it was like, we don't have spaces for young people, we don't have the ability to fund young people, sorry we don't. But now they're opened, they're welcome. We have a seat in the room when opinions are sought their opinions are asked for as well.'

Yes, more involvement of everyone, including in the political processes, may well be a key component. Does that extend beyond youth involvement and awareness?

'In St Lucia, I think the consciousness has evolved and people are now more conscious, so, the kind of policy instruments that the country has now developed, there's a second generation policy on climate change, and that policy even looks at things like a facility, a financing facility for responding. It's no longer a matter of the state. Households are taking critical stock of what is happening to them vis-à-vis climate change and what are some of the things that they have to do to overcome the impact of climate change and climate variability. So, previously when you only would have had a state response, or an institutional response, you are now having householders respond to that. What is most important factoid, if you will, is that it is now come down to the household level. And that's definitely a shift. There is no longer, oh this is an issue that only the state has to be involved in as the public sector. No, no, it's now – and even in small, small communities the people are now beginning to take the steps to do their own individual adaptation, rather than waiting.'

Yes, so the message being about a wider awareness, greater involvement and actions, including youth and householders. The idea being that others can learn from an increasing consciousness and participation in your countries. Anything else?

Global environmental education

'Maybe one more thing concerning lessons learned is that Mauritius has invested a lot into education.'

'What is very, very important, is to educate the people, the community, that there is a change coming. It will get worse and worse and worse. They need to be able to understand that the change in the weather, the climate change is something that they have to understand. And take on board as a very, very important part of equipping themselves to live in this, in their lifetime. It should be in the

curriculum in schools, secondary school. It has to do with our globe, our planet earth and it's not something that we can isolate into one corner, or deal with the island world, no, it's the whole of the world, and everyone should be informed and understand and learn.'

So, that's a big message for those outside of your islands then, for the global community – the importance of environmental education for everyone. What else do you want to say to those that are at the forefront of this work of responding to environmental challenges? What is important for these people to learn and understand?

Acting on global emissions

'We want to push for the larger developed nations to really turn the things around with emissions.'

What would help to make that happen?

'How do we convince them to act now? I don't know how, like the Pacific has been very vocal in terms of telling the stories, trying to get to everyone's attention, that the Pacific is on the forefront now and urgent action needs to be done now, but how much of the impact is it really happening to those larger countries? Because they're not seeing that impact now, directly themselves.'

'I think one message I would give is if they were to think more importantly about the Pacific Islanders. We are the ones most affected by it, and we are still a developing country, and the fact that they still haven't signed, and still for that summit, the fact that they still haven't signed it gives the impression that they don't care about us or what's going to happen to us after that.'

The summit you mention, that is the Conference of Parties, right? Otherwise called the COP, where world governments gather to make agreements pertaining to the United Nations Framework Convention on Climate Change and in particular to make commitments to their emissions.

'If you don't stop the coming emission of gasses, for the, I think it's 1.5,[32] then there's no need to have this COP meeting, there's no need to have such meetings because they're not signing it. It's better to take that money and do with it, like adaptation programmes for the Pacific Islanders.'

'And those who aren't willing to follow what the UN is asking them to do about the greenhouse gases, let them see it from our perspective. Check and see how many islands have disappeared. Check and see how the world is changing because they are not listening to what the smaller people are saying.'

[32] In reference to IPCC reporting and the highly-debated topic at the COP concerning the need to keep the global temperature rise to less than 1.5 degrees Celsius.

'The lessons that we're going through now should be taken on board now, as preparing for the future. If we do things now, any of those predictions, scenarios, maybe we can save from other countries happening. Don't wait to do your part.'

Thank you for sharing those reflections and comments for your own governments, authorities and citizens as well as those outside your islands. I hope that more governments, academics, and citizens will listen to your stories and learn from your experiences, and that they become part of a new mapping of responses to environmental change. My wish is that more people will listen to more of your perspectives because I think this is a key ingredient to writing the New Story of humanity's relationship with Earth.

It's time for me to leave the mangrove now, but I don't know how to say thank you in a way that appropriately articulates my gratitude. For a human being, a mangrove can be a largely impenetrable space. You are thick with tendrils, intertwined with an admirable complexity. Too often, human interaction in your midst is of the destructive nature. You get slashed and removed in the name of development of a landscape for economic gain. And so, it is no wonder that you – being the local perspective and those that hold it - are respectfully protective of tales and lived experiences, because too often, the result of sharing has led to harm. It is for this reason that I am immensely grateful to all of you. Being welcomed to navigate amongst your varied perspectives has been a tremendous honour, and I will work to develop this into an articulation of my inquiry and will submit it with great humility and gratitude for the trust you have bestowed upon me. May it result in a more respectful understanding of how you not only cope with but thrive in the face of environmental change. May this lead to the betterment of all - especially the practices of those who have avoided or failed to acknowledge the wisdom of the mangrove heretofore.

8. Going deeper with Dogfish Woman

Bill Reid's Dogfish Woman (Qqaaxhadajaa) Image Source:

https://www.sfu.ca/brc/imeshMobileApp/imesh-art-walk-/dog-fish-woman.html

---

This conversation with the Dogfish Woman serves to reflect on the mangrove conversations as a whole, but in particular the last group conversation about the messages that the mangroves want to explicitly share.

Following this, she encourages a 'going deeper' into the issues that underlie the those articulated by the Mangroves. Through this, it is explored that something yet more fundamental must be taken up if we are to be able to address the issues of global environmental change.

Together with the Dogfish Woman, I recap the contributions to the New Story that come from the Mangrove, and reiterate the important role that story and narrative, including narrative inquiry, have to play in its continued collective development. The conversation ends with some hopes for this inquiry.

Remembering an arrival

Leaving the mangrove forest heading towards the Spirit of Haida Gwaii, I see Dogfish Woman coming up out of the water onto the shore. Perhaps she is resurfacing from another trip to her underwater community. I want to have a discussion with her, one that is longer than the brief conversations we have had earlier. I think that it will help me work through what I've just learnt from the mangroves, especially the last group conversation about their messages to their own fellow citizens, their governments and others outside their islands.

Before I can even approach her to seek a dialogue, she is already full of observation and questions.

'I can see that your journey is almost now over, now' she comments astutely. 'You wear it in your stride – your sense of being overwhelmed yet full of gratitude, and ready to give over that which you have learnt. Now is a good time to remember why you are here, what has brought you.'

'You're right,' I reply. 'I want to reflect on the messages that the mangroves have conveyed. The conversation we just had has provided a map of sorts; a map of responses. It's time to come back around to the beginning and realign to the purpose of this journey in order to answer a sense of duty I am now fully cognisant of.'

'Let's go back to the beginning,' she suggests. 'Remind me, why did you come here to this island and why have you been speaking to the mangroves for this long?'

'I came to this project with a desire to understand multiple perspectives,' I say, 'to listen sincerely and to be in a mode of learning about the ways in which the humanity can be responding to global environmental changes, to learn from and through story. This feels especially important as I've observed so much 'expert' knowledge circling its way around the globe, particularly that which is being brought to island nations who have their own stories and knowledges upon which to draw. I came to this project with a conviction that we should first listen to these stories, to their understandings of what 'resilience' might be. What drove me here was that conviction that these should be regarded first and foremost, before any attempt to identify, measure of modify the resilience within their societies, governments, or environments. I have also discovered, during the course of this inquiry, a realisation that a story can change the future, and have experienced an awakening that our current narrative about the interaction between humanity and Earth is insufficient to meet our present circumstances; that we can no longer live out the story line of, 'humanity slowly harnesses Earth until the equilibrium is so unbalanced that eventually Earth takes back her own domain and extinguishes humanity'.'

'Maybe you can help me sort out what has been learned, and how it can be useful,' I suggest. 'I want to return to the Tree of Resilience and offer something towards its development in order to complete the *Sokota* honourably.'

Looking deeper at the mangrove messages

'So, let's start with how the last conversation went. You went back to the mangroves, collectively, didn't you?' she asks. 'What did you learn from that interaction?'

'I wanted to hear direct messages from the mangroves to others,' I reply. 'I wanted to hear what they thought that non-islanders could learn from their experiences of being at the 'sharp end' of environmental change. I asked the mangroves what they wanted to tell people outside their islands, but was surprised when most of their replies were actually messages that they wanted to tell their own governments or fellow islanders.'

'So, before giving messages to outsiders, they took the opportunity to express their messages to people closer to them?' she asks.

'Yes,' I respond. 'Perhaps I was wrong in not asking them for that in the first place – I was so fixated on listening for the purpose of what I and others could learn, that I did not offer an opportunity to say things that were relevant locally.'

'But that was not your reason for coming here, was it?' she clarifies.

'No, I suppose it wasn't,' I answer. 'And at the time, I found their responses slightly disorientating, but now I am glad that they perceived the question this way, and that they took the opportunity to articulate those messages.'

'What do you think that says about their situation?'

'What do you mean?' I ask.

'Well, by virtue of the fact that they were primarily concerned with the messages for their own islands, even when you asked them to what outsiders could learn, it demonstrates that they are focussed on and committed to making changes, locally. They are not expecting that only others from outside will do the changing.'

'True, it demonstrates that they do things by their own initiative and aren't going to simply wait around for handouts. There may be some individuals who wait, for example after the storms there are some who wait for government assistance before rebuilding their homes in order not to miss out on financial support. However, the individuals and groups already making the changes in communities

and for their countries - those who are visible, contactable and already active - are going to keep pushing ahead. It reminds me of one comment from a prominent Fijian who when speaking at a UN Conference said that resilience is in the very nature of Pacific islanders.'

'What did they want to say to their fellow islanders and their governments, then?' she asks.

'A wide range of things, really.' I explain. 'It's difficult to summarise because it's so wide-ranging, but it starts from the desire for more planning and strategies at the government level. However, there was also an awareness that government has limitations to what it can actually do, and that citizen-led activity is necessary.'

'What else did they want to say to their governments and fellow islanders?'

'I think the strongest message was the need to work together, to collaborate with information exchange and linking up resources, skills and knowledge, and not just at local level but at the national and regional levels as well, and eventually supporting a wider south-south movement. All three islands also stressed the important role of education in their countries, and there was some desire to bring back traditional knowledge within this,' I explain.

'So, what are you going to do with these messages now that they have been expressed?' She inquires.

'I'm not sure, to be honest. I wasn't planning on receiving these kinds of messages for islanders and governments. I suppose it was an expectation I began to feel midway through the journey when I was asked by an island government minister to come back and give recommendations.'

'In what way?' she asks.

'Well,' I continue, 'there was a point at which I was explicitly asked to provide recommendations to a government body. But I did not feel that this was commensurate with the ethos of the study. That this kind of request was, in essence, a continuation of a way of working that I wanted to challenge. Being requested by a government minister to make recommendations for what the island could do to improve their response to environmental change - that was a perpetuation of the very knowledge structure I was trying to trouble – the tree preferred to rhizome structure, the notion that there is a DIOT which gets traced over and over. My trust has always been in the belief that this knowledge is already available locally – within these three island nations – and to the importance of turning to your own knowledge, yes together with the experiences of others, but to turn to local knowledge first. This thesis has its contribution to make in the realm of the development of the New Story, both in terms of some of its potential content and also a potential way attempting its writing, which is ultimately,

an endeavour for all of humanity to collectively write. That is what this thesis offers, rather than being a contribution towards government strategies themselves.'

'And how did you handle this request at the time?'

'I explained that it was not the purpose of the study to suggest to governments what improvements could be made, but rather it was my belief that local individuals themselves know what is best to do, and to begin with the knowledge found on their own shores – that essentially the governments should be going to their own citizens to get ideas and viewpoints before coming to knowledge systems from outside.'

'So, if you've decided not to feed back directly to governments, then what is lingering which makes you uncomfortable?' she asks.

'Well, I feel a duty to do something with what has been voiced, even if it's not what I came seeking. It's an expectation that I tried to sidestep, but this dilemma that I must face,' I say, candidly. 'Even if this was outside the scope of my study and not my primary audience.'

'And what do you think you will do?'

'Instead of ignoring these contributions, I will bring these aspects back to the Tree of Resilience as a citizen response.'

'Okay, so, even though most of their messages were for other islanders and their governments, did they have some messages for others outside of islands – the type of messages you were initially after?' she inquires.

'Yes, they did,' I reply, 'and to my mind, these seem to fall into two categories: messages about what we can learn from their firsthand experiences, and messages they want to explicitly communicate to non-island nations about the seriousness of the environmental changes they are experiencing in islands, along with the responsibilities tied to these changes.'

'The former,' I continue, 'can be understood as being about policy and practice experiences of islanders. These include the benefits of a strong political commitment to environment and sustainability, national political stability, as well as specific policy mechanisms such as corporate social responsibility, which were seen to contribute effectively to positive responses to environmental change that help people meet the demands of this shifting landscape. Elsewhere, it was felt that policies and approaches to land ownership can engender a commitment to environmental awareness and protection as well as a sense of responsibility amongst citizens. One other policy-related learning was that making finance available at the household level to make adaptations to personal property

and practices can engender a heightened collective consciousness that everyone has a part to play in awareness raising and responding to environmental changes. These are all lessons that islanders wanted to share. Others felt that the traditional knowledges and practices which are still alive, and their proximity to nature, both through lifestyle and awareness and also the physical, geographical or place-based realities of living on an island are components to environmental awareness from which others can learn. The importance of education – both locally and globally - featured strongly in this conversation as well.'

'And what about the messages about the seriousness of environmental change,' she prompts.

'These latter messages can be seen as urgent promptings that attention and action is desperately needed from large countries, particularly in the areas of emissions contributing to climate change - and even more fundamentally, taking climate change more seriously. There were calls to act urgently, to stop wasting money and resource by going to global deliberations if you are not going to make the necessary political commitments to holding the global temperature rise below the 1.5 threshold identified by islands as vital for survival. Some of the comments were about trying to put oneself in the shoes of the islanders, about being considerate. One of the comments was a prompting for non-islanders to, 'develop a little conscience.'

Digging yet deeper to issues of equity

'Did you feel that was appropriate, asking non-islanders to develop more conscience?' she inquires.

'Yes, I do. I have heard clearly this argument that it is not the island states that are creating the conditions causing the environmental changes, yet they more acutely suffer the consequences. One of the examples of this commentary is to, 'See how and understand how that is not just a once a year thing, like hurricanes and storms, but it's going to be a living threat to their lives and livelihoods and that they have to be part of that solution or, probably that's not the best word, but attempt to reduce on those negative impacts.'

I continue, 'And another said, 'all the pollution happening in China, all the carbon dioxide emission in China, Russia, America. We paying down here for it. It's local in nature but the problem is global. That's the problem.' I have heard this call for justice throughout my journey, the demand, as well as heard a demand for reparations. I feel that consideration and more conscience are required on the part of larger nations whose policies and practices overlook the plight of islanders.'

'And do you feel it is sufficient, that developing some consideration, or even providing reparations, is enough? Perhaps something more than consideration and conscience are needed,' she challenges. 'Can you go further than that? Can you see deeper than that? Consider that, perhaps one's conscience

sounds out when something wrong has occurred or is about to occur. That is speaks when you need to make amends for some action, or need to curb an action from happening in the first place. What is it, in this case, that needs to be rectified, other than emissions control, or paying reparations? What are the deeper issues that you are not yet addressing?'

At this point, sitting on the shore I begin to feel annoyed. I thought I was nearly done with this journey, and I find this a rather inopportune request. I want to ask her to just let this drop, to allow me to simply return to the centre of the island so I make a visit to the Tree of Resilience and take the mangrove messages and be on my way.

'Think back to some of your other interactions,' she presses. 'What else have you heard on this *Sokota*? Try to remember what you have heard that is pointing to the deeper elements and issues. Perhaps you have been looking at the more visible and tangible environmental changes. Perhaps these are just symptoms of something deeper which is going on.'

She's right I realise, my own conscience speaking now, just like it had when I heard those messages for islanders and governments, which I felt compelled to share back even though they were not what I went seeking. This is another aspect that needs further unpicking, I decide.

'These things like to keep themselves hidden,' she explains, 'buried way down in the Earth, but it is beginning to be exposed now, in part by the voices of the mangrove who are not going to tolerate it any longer.'

'Do you mean like the mangrove roots that are sometimes submerged by the ocean waters at high tide?' I ask.

'No, something deeper yet. You've been looking at the root structure that is sometimes hidden by the tide, but not addressing the roots that are still further buried in the Earth. The root structure is much more than you can see even when the water is out, it goes deeper and still deeper.'

At this point, recollections of other conversations begin to return to my consciousness, so I recount to Dogfish Woman another comment made by St Lucia: 'If we talk about sustainable livelihoods, it must be done properly. For example, this idea of 'wise use management'. What is 'wise use'? It must be equity in everything that we do. Without equity, without proper balances, we're only going to do things. We cannot cut down the whole hillside and talk about inequity. We must leave the grown, the forest, we must leave the forest edge, it must be well protected. The reserves that we have, we set aside, must be maintained, we cannot go against what we have established. So, everything must be done in an equitable manner.'

Yes, she's right, I am forced to admit to myself. These are the implications for what has been voiced so far because they do point to something deeper. This needn't take much more time, but it is vital to now dig a little. It is already there, waiting to be seen and heard, and this little more could make an important difference.

I start, 'I remember hearing from St Lucia that 'The simple thing is to – it's not that simple, but – if we can live in harmony with each other, and in planning development, we need to do it in a cohesive manner. We need to always do things together.''

'Yes, you've articulated this concept of working together previously,' she points out, 'but you have positioned this in relation to knowledge exchange, as a matter of efficiency and information and networking to get things done. However, this deeper sense of doing things together is about challenging the underlying inequalities in order to do things truly together, as equals. Working towards global changes to address environmental changes, what will that actually take?'

'This is a challenging question,' I remark. 'Sure, it sounds nice, but how do we actually DO this?'

I pause, stumped for a while until I finally recall yet another voice from St Lucia. 'There was a particular discussion that really did get into the deeper issues,' I tell her, 'where the concept of finding a new paradigm emerged.' I recall. 'And at the time, I found the prospect, the concept, exciting but was not seeing it as possible. The suggestion was that, 'we need a thought process that does not take us beyond the limits of natural and social systems. At some point in that evolution we have to talk about distribution and equity, and so on. You see, it doesn't make sense, take a look at Saint Lucia. You have been in Saint Lucia for a while, you can see the crime rate, I mean a lot of people are suffering, the economic situation is really bad in St Lucia, but a few people are thriving. Is it the case that the economy is perhaps not growing as reflected in national income figures, but in the pockets and bank books of a limited number of persons it's growing quite big, and so on. My point is that we have to review the paradigm that we use and so on.''

'Yes, now you're getting it,' she encourages. 'This new *thought process,* this required *paradigm* requires us to dig deeper to the issue of reducing inequalities. Part of this *working together* is the breaking down of inequalities and seeing humanity is one and somehow getting beyond nation states, races, genders, all of the categories that make us see division amongst people.'

'As an extension of this,' she continues, 'we can return to the topic of multiplicity. So far, you've been arguing for multiplicity, which essentially looks at differences between things, variations, rather than sameness or equity.'

'Yes,' I concur 'I've been using multiplicity as a way to argue that we need a range of perspectives in order to address environmental change, particularly those from islands who are dealing with this from the sharp end.'

'But now you are finding deeper arguments for the breaking down of difference and division.'

'You want me to do away with the concept of difference, of multiplicity?' I balk. 'Get rid of them because they are the deeper driver of the environmental issues? How do I make that change?'

'No, I do not think that multiplicity is now invalidated,' she replies. 'How about trying to "defend equality whenever difference generates inferiority and defend difference whenever a call for equality implies a threat or loss of identity?" [33] But perhaps you, too, need a paradigm shift,' she proposes.

'Well, yes, I am also arguing for a kind of paradigm shift,' I agree, 'but this is in terms of how we go about addressing and talking about humanity's relationship to the Earth. The paradigm shift I am proposing is one about our narrative, our Story.'

'However, in this conversation with St Lucia that you've just recalled,' Dogfish Woman points out, 'the paradigm shift that is presented is about is human equity. The point made there is that people are suffering from economic and social injustices and that a certain paradigm of thinking about natural and social systems is creating these inequalities which need to be solved and are linked to environmental degradation. Until we address these problems, we cannot make significant change in environmental problems because they are the root of the issue. What did you learn in your conversations about how to work towards this this equity and cohesion?' she asks.

'Well, addressing environmental change can be a social space where everyone can make a contribution, no matter who they are,' I reply. 'Mauritius did have some ideas about this, that: 'Each and everybody – each individual has a role to play no matter how educated or non-educated the person is – the person still has role. Their skills and their thinking might help to move on with a lot of things.'

'So, it looks like what is the deeper issue here is human equality and equity,' she remarks, 'and maybe that's not what you set out to look at, but it might be an important key to the New Story you are advocating. And by rewriting the story, perhaps it is not just a story about of human relationship with the Earth but also human relationships with one another and what that has to do with the in relation to the Earth.'

[33] (Santos, 2008, p. xxviii)

‘It might just be,’ I contemplate, ‘that, unless and until we deal with matters of unity and equity, we cannot properly address matters of humanity’s relationship with the Earth. It makes me wonder if the Earth’s environmental changes and challenges could be the very problem which humanity needs in order to work together; the problem that could force us to overcome inequalities in order that we can respond to the Anthropocene.’

‘Yes,’ she responds, ‘some have argued that “The growing scientific evidence that the world is seriously threatened by human impacts causing global warming and chemical attacks on the stratospheric ozone layer, have finally pushed the environment to the top of the political agenda…Fortunately, there are great pressures on governments for change, and the environment is one of them.”[34] In other words, sometimes crises can bring forth great victories.’

A map from the mangrove: Contributions to the New Story and ways to continue its development

‘So, what you have here then,’ she suggests, ‘are essentially the components of a map from the mangrove.’

‘You think so?’ I ask.

‘Well, the leaves that blew off that Tree of Resilience were tracings of a resilience plan – the way that others from outside the islands think responses to environmental change ought to be. In this way, these tracings served to perpetuate an Old Story because resilience is part of the Old Story way of dealing with environmental change. You have meanwhile identified something to take back to the Tree of Resilience through these conversations, but it is not mere tracing. That is to say that these have not tried to replicate already understood responses to environmental changes, but rather to ask again and map out an understanding from local perspectives.’

‘Yes, I have tried to avoid some of the Old Story ways of thinking about environmental change such as ways to measure or increase resilience.’ I reply. ‘Instead, I have tried another way to understand it, through wide-ranging conversations and focusing on a multiplicity of voices. Through this have been identified some components of a map that comes from the mangrove itself. These are contributions to the New Story of humanity’s relationship with the Earth.’

‘Tell me again,’ she urges, ‘what they are. Recap them here and soon you will be ready to take them to back to the Tree.’

[34] (Dahl, 1990, pp. 50–51)

'Well,' I begin, 'there is a set of these that come directly from the mangrove conversations. Those include the importance of trusting in nature, to let nature take its course, to resist the narrative of fear, the role that civil society – and indeed every individual – has to play in meeting the challenges of environmental challenges, the importance of blending different kinds of knowledge to find answers to the problems, and the point that education has a key role to play in all of this.'

'And if those are potential elements of the New Story,' Dogfish woman prompts, 'what other things have you come to understand that can help with the writing of the New Story?'

'First, as we've just been exploring, is the importance of going deeper to the more underlying issues, the equity and justice ideas we just discussed.' I answer. 'And on this point I want to add that I agree with Boaventura de Sousa Santos who asserts that "If suffering, murder, humiliation, and destruction continue to escalate the survival of the planet may be at stake."[35] The way I understand this is that we need to deal with the issues of human equity in order to fully address issues of environmental change in the age of the Anthropocene. Santos would approach these as matters of global social justice - the root of which he argues is global cognitive justice – which must be secured in order to establish harmony on, for and with the Earth. Part of this is looking for otherwise submerged knowledge, like we've been discussing.'

'Second,' I continue 'is the importance of listening and dialoguing. One example is the role that *talanoa* can play in how we consult about the New Story and about environmental change including how we address it in global deliberations.'

'Would you believe,' she adds 'that this is already happening?'

'What do you mean?' I ask.

'There, in the middle of the island,' she says, 'there are already groups of people using the *talanoa* approach to have the next set of global deliberations about climate change.'

'Already? That's incredible!' I exclaim. 'How are they doing it?'

'Well, the Fijian example of *talanoa* was used at a global deliberation recently and it's now taken hold in the overall process with *talanoa* sessions about environmental change happening around the world, not just on this island,' she explains. 'It's being seen as a new way to address environmental concerns through the principle of storytelling.[36] It perhaps takes more time, but seems to be taking hold.'

[35] (Santos, 2014, p. viii).

[36] Fiji played a major leadership role in the COP23, serving as President of the deliberations. With this platform, it introduced *talanoa* principles and practices into the COP process. As of November 2018, according to the

'Yes, and the slowing down to have real dialogue is part of the process. Working from the middle and resisting the tendency to jump too quickly to a solution, and using storying as part of that process,' I add. 'This reminds me of one final conversation I had with the Fiji mangrove. It was something that the Fiji mangrove said about how the their perspective can add to the processes of dealing with global environmental change: 'Fijians are good story tellers. They can tell a story! And it's using that gift of storytelling to relate to communities or to relate to children or relate amongst each other, different stakeholders.''

'So maybe it's not so surprising that Fiji has brought *talanoa* to the global deliberations,' she observes.

'I think it's a much-needed contribution,' I comment. 'Inasmuch as *talanoa* and its storytelling process has a role to play a role in global negotiation processes, the use of narrative inquiry has a large role to play in the academic arena of research and in the development of the New Story itself as a collective endeavour.'

'So, putting all of this together, drawing on all of these understandings, how would you describe the ethos of this New Story?' she asks.

'At this point in time,' I begin 'if I were to start writing a version of the New Story, it might be built around the idea that there had been great injustice in the world which led to a great destruction of the Earth. When the people looked around and noticed the destruction they were creating, they first mended the inequalities between themselves, which in turn allowed them to begin to mend the Earth. I would want to move away from the story that Earth had been trying to exterminate us, but that the environmental problems were a wakeup call, it is shaking us up enough to get us to act honourably, to respect one another. If we can construct a story that is about nurturing, learning and modification, one where humanity overcomes its consumption and domination tendencies, if we can see Earth as nurturing and instructive, rather than reactive, this can go a long way towards rewriting our own response to Her.'

'Do you worry that this will seem very dreamy and unrealistic?' she challenges?

'I agree with researcher, advocate and author Arthur Dahl on this point,' I say. 'He argues that:

> *"At such a crucial point in history, when ecological problems are building towards a crisis of world proportions, one could be tempted to dismiss such visionary exercises as utopian. To believe that we can change our ways, that the human race is capable of developing a sustainable and positive relationship with the*

COP23 website, *talanoa* sessions with an emphasis on the use of storytelling to build consensus and make decisions were occurring in more than 40 countries and feeding into the COP UN Climate Change Conference processes, thereby radically changing the process of these global meetings. (COP, 2018)

earth is a stimulus to action: but having such a vision is not enough. The real challenge of our times is not so much to define where we should be going, as how we are to get there – the end is not more important than the means." [37]

'And a New Story of humanity's relationship with the Earth is one part of how we are going to journey there.'

'There's one more point of curiosity that I need to raise. Do you think that there will eventually be one New Story of humanity's relationship with the Earth?'

'You mean, a single, unified story without multiplicity?' I ask.

'Yes. I ask because the phrase you use, 'New Story', it's a singular, but you always talk about multiplicity, and I find this contradictory,' she challenges.

'It's interesting that you point this out and it's an important nuance. I suppose it's a worry, yes,' I admit. 'Perhaps over decades and centuries, this seems inevitable, but I would argue that it is not preferable. I admit that this is a challenge for those who consider themselves New Story writers. Maybe this is an important test for the community.'

I continue, 'The way I talk about the New Story is, you're right, in singular terminology. It might be that the New Story community has itself fallen into a form of replacement-thinking, so energised by the idea of eradicating the Old Story - the old grand narrative - that we have taken up the very singular phraseology we, at least I, wish to evade. Perhaps we have taken up a label that is potentially destructive and not representative of the ethos behind the project, or at least the way I have interpreted the project to be.'

'You mean to say that perhaps the New Story community needs to rethink the way it presents itself, and to reconsider how it talks about itself?'

'Well, I think it's worth considering, or at least I need to engage further with this as I go ahead. When I think about the places from which I draw inspiration, singularities in label do abound: some talk about a more beautiful world, others about another knowledge. On the face of it, we can understand these to be singularities of noun, overwritings of singularities perhaps. However, it actually seems to me that there is an implicit multiplicity operating underneath it all, however this is not always conveyed in the labels or phrases we use. Perhaps we have fallen victim to the need for a catchy and relatable label. This will be a good area for discussion in the future. You've given me a very important area to contemplate and take forward, thank you.'

[37] (Dahl, 1990, p. 55)

Hopes for the inquiry

'What are you going to do now?' Dogfish Woman prompts.

'What I would like to do now, after completing this narrative inquiry,' I reply 'is to keep interacting with the ideas of trusting nature and the notion of fear reduction. I wish to continue exploring the concept of submerged knowledge. I want to keep listening to stories, using Narrative Inquiry to share those stories through a storytelling and conversation writing approach that has begun to take shape here.

'I now see that I entered into this inquiry process with a great sense of naivete about the ability to simply listen to a multiplicity of perspectives and retell those through a simplistic, minimising form through thematic analysis and categorisation. I initially embarked on this journey with a desire to push back against the Dominant Image of Thought of resilience and wanted to critique it as a measurement-based response employed by the International Development Community within island nations.

'I am pleased that a different perspective and focus has emerged throughout the journey. It has engendered within me as a New Story writer a lack of satisfaction at simply interacting with the mangroves when the tide is out and when the roots are visible. I understand more clearly now that unless and until humanity can see itself as one, without division and without fear, that we will not be able to rewrite the story of our interaction with the Earth because the inequalities we face within the human race are the buried root that wishes to remain hidden and which perpetuates our domination and misuse, leading to the exploitation of the Earth.

'I am also thankful that a different approach has emerged throughout the journey, one that has, instead of using categorisation and classification, taken up Narrative Inquiry with a form of conversation writing emerging as a result. I want to continue shaping that craft in order to contribute a narrative that replaces fear with something more symbiotic, something less fear based and more respect-based which simultaneously recognises that we must dig deeper and solve inequalities before we can fully repair the human-Earth relationship.

'Finally, my wish is that this work can inspire others to also listen and converse more often and more deeply, to appreciate the beauty and wisdom of multiplicity, and to contribute to a New Story - one that can help rewrite the future of humanity's interaction with the Earth in order to bring a different balance and a new harmony.'

Sokota: Back to the Middle

Leaving Dogfish Woman and the Spirit of Haida Gwaii, I walk back to the middle of the island. The grounds of the meeting place are being put back together by many helping hands. Conversations are being had about the tropical storm that had blown through so quickly. I approach the centre of the meeting grounds and, contemplating what I might give back to the Tree of Resilience, I recall what Dogfish Woman had explained. All its leaves containing the Plan of Resilience had been blown away in the storm.

I recall that this seemed an opportunity to replace those resilience tracings with a more true mapping. I consider the importance of 'the return' as part of a sokota, wondering how I will accomplish this giving, contemplating humbly how much I have also received.

As I approach the centre of the grounds, however, I do not recognise the tree, for it is no longer a singular entity. Instead, it is growing into a uniquely new tree with many types of branch, leaf, and bark. I cannot identify it as a single type of tree. It certainly is no longer pruned but is astonishing in its variety and beauty.

The tree is being cared for by a large group, all working steadily. The original gardeners are there, but they are now joined by many more numbering just over a hundred. Tending this tree are teachers, politicians, taxi drivers, researchers, village chiefs, students, parents, NGO workers, volunteers, business owners, and writers.

The tree has expanded, and some people are tending to the canopy whose leaves have already begun to return in many shapes and types. Others mend the branches of many forms, with their woods of differing colours and barks of ranging textures. The tree has gone through a transmutation, I realise. It has taken on a new shape by virtue of this attention. As a result of this collective effort, it has responded and is becoming the Tree of the New Story, no longer a singular tree of resilience.

I take out the story tendrils from the mangrove trees with whom I've been conversing, and I quietly join the others in their processes. With the rhizome-like offshoots in my hands, I am reminded of the propagation of modern apple trees all around the world which came from the cuttings of trees in central Asia along the old Silk Road. I observe the careful method of grafting and join those working at the base of the new tree. As I work, it becomes clear that this is this is how the tree is becoming multiplicitous. I carefully add the citizen responses and the messages to others outside the island. Then, to this, I add the other learnings from mangrove conversations: the lesson of trusting in nature; the importance of letting nature take its course; the courage to resist the narrative of fear; the understanding of civil society's role and citizen responses; an understanding of the importance of blending different kinds of knowledge to find answers to the problems, and; the recognition that education has a key role to play in all of this.

As I quietly work, my mind looks into the future of this multiplicitous tree of the New Story, and I contemplate its own forthcoming journey:

Over the decades, the tree of the New Story will first grow into a forest rich in diversity. Not all trees in this forest will thrive. In this forest it is not the strongest species which will prevail - not the most cunning nor the most aggressive, but rather the most true and the most pure which will flourish. The trees planted with the truest of intention are those which will flourish in the New Story forest. There will remain a multiplicity in this forest for a long time to come. Many strands of New Stories will emerge, unless and until we learn to speak a common language across our many perspectives, disciplines and approaches.

Diversity must continue to persist in this middleness, in this space between stories for yet some time. And slowly, the New Story will emerge, and it will unite us and will help to restore humanity's relationship with the Earth, rooted in the soil by the lines of our communication, and watered by the purity of our intention. That which comes from many yet seeks to unite for the common good will become that which flourishes, and with this we will rewrite the story of humanity's relationship with the Earth.

These Words

As the above *Sokota* expresses, what the New Story of humanity's relationship with the Earth will look like is yet to be seen. It is emerging, forming, and will require a great collective work of respectful listening, sharing and growing. We are presently in the middle of that act, and this thesis - these words - are a contribution to its collective writing, a contribution towards both its potential substance and methodology of Narrative Inquiry through conversation writing.

As I reach the end of this narrative inquiry, I am grateful for all that I have learned, including the value of journeying with ears and heart open, unafraid of messiness, gratitude for challenges and willingness to start over like a rhizome. I am reminded that learning begins from a middle space and that it is okay to set out without knowing the ending. With this, we return to the words from *This Paper Boat*:

> *"My mother used to make up stories in the darkness that no one knew the endings to. It was a kind of permission to have imperfect and beautiful plans."*
>
> *(Kan, 2016, p. 13)*

An Imperfect and Beautiful Tree

References

Adams St.Pierre, E., 1997. Circling the Text: Nomadic Writing Practices. Qual. Inq. 3, 403–417. https://doi.org/10.1177/107780049700300403

Adams, W.M., Mulligan, M. (Eds.), 2003. Decolonising Nature: Strategies for Conservation in a Post-colonial Era. EarthScan, London & Sterling, VA.

Adichie, C.N., 2009. The danger of a single story.

Armitage, D., Berkes, F., Dale, A., Kocho-Schellenberg, E., Patton, E., 2011. Co-management and the co-production of knowledge: Learning to adapt in Canada's Arctic. Glob. Environ. Change, Symposium on Social Theory and the Environment in the New World (dis)Order 21, 995–1004. https://doi.org/10.1016/j.gloenvcha.2011.04.006

Bacchus, M.K., Brock, C., 1993. The Challenge of Scale: Educational Development in the Small States of the Commonwealth, 2nd Edition. ed. Commonwealth Secretariat, London.

Baha'i World News Service, 2016. The World Humanitarian Summit: Rising Together. BahaiTeachings.org. URL http://bahaiteachings.org/world-humanitarian-summit-rising-together (accessed 1.23.18).

Bainton, D., 2007. Suffering development : indigenous knowledge and western education in Ladakh (Ph.D.). University of Bristol, Bristol, UK.

Baird, J.-A., Johnson, S., Hopfenbeck, T.N., Isaacs, T., Sprague, T., Stobart, G., Yu, G., 2016. On the supranational spell of PISA in policy. Educ. Res. 58, 121–138.

Basso, K., 1996. Wisdom Sits in Places. University of New Mexico Press, Albuquerque, New Mexico.

Batalden, M., Batalden, P., Margolis, P., Seid, M., Armstrong, G., Opipari-Arrigan, L., Hartung, H., 2016. Coproduction of healthcare service. BMJ Qual Saf 25, 509–517. https://doi.org/10.1136/bmjqs-2015-004315

Beiler, K.J., Durall, D.M., Simard, S.W., Maxwell, S.A., Kretzer, A.M., 2010. Mapping the Wood-Wibe Web: Mycorrhizal Networks Link Multiple Douglas-Fir Cohorts. New Phytol. 185, 543–553.

Berkes, F., 2009. Indigenous ways of knowing and the study of environmental change. J. R. Soc. N. Z. 39, 151–156.

Berkes, F., Colding, J., Folke, C., 2000. Rediscovery of Traditional Ecological Knowledge as Adaptive Management. Ecol. Appl. 10, 1251–1262. https://doi.org/10.1890/1051-0761(2000)010[1251:ROTEKA]2.0.CO;2

Berkes, F.J., Colding, J., Folke, C., 2002. Navigating social-ecological systems: Building resilience for complexity and change. Cambridge University Press, Cambridge.

Berry, T., 2003. The New Story, in: Fabel, A., St John, D. (Eds.), Teilhard in the 21st Century: The Emerging Spirit of Earth. Orbis Books, Maryknoll, NY, pp. 77–88.

Berry, T., 1999. The Great Work: Our Way into the Future. Bell Tower, New York.

Bhabha, H., 1994. The Location of Culture. Routledge, New York.

Bhambra, G.K., 2014. Connected Sociologies. Bloomsbury, London.

Bond, T., 2002. Naked narrative: Real research? Couns. Psychother. Res. 2, 133–138. https://doi.org/10.1080/14733140212331384907

Bovaird, T., 2007. Beyond Engagement and Participation: User and Community Coproduction of Public Services. Public Adm. Rev. 67, 846–860. https://doi.org/10.1111/j.1540-6210.2007.00773.x

Briguglio, L., 2014. A Vulnerability and Resilience Framework for Small States, in: Lewis-Bynoe, D. (Ed.), Building the Resilience of Small States: A Revised Framework. Commonwealth Secretariat, London, pp. 10–75.

Briguglio, L., Kisanga, E.J., 2004. Economic Vulnerability and Resilience of Small States. Commonwealth Secretariat, London.

Bringhurst, R., Steltzer, U., 1992. The Black Canoe. Douglas & McIntyre, Vancouver, British Columbia.

Brown, P.G., Timmerman, P., 2015. Ecological Economics for the Anthropocene: An Emerging Paradigm. Columbia University Press.

Bryman, A., 2004. Social Research Methods, 2nd ed. Oxford University Press, New York.

Cabot Institute, 2014. 2014: Small Island States | Cabot Institute for the Environment | University of Bristol [WWW Document]. Small Isl. States - Living Sharp End Environ. Uncertain. Case Study. URL http://www.bristol.ac.uk/cabot/what-we-do/more-case-studies/2014/57.html (accessed 8.25.18).

Cahn, E.S., 2004. No More Throw-away People: The Co-production Imperative. Essential Books Ltd, Washington, D.C.

Calhoun, C., 1995. Critical Social Theory. Blackwell Publishers, Oxford.

CARDI, 2015. Sargassum Seaweed and its use in crop and livestock production: possible agri-business opportunities (Policy Brief No. 01). Caribbean Agricultural Research and Development Institute (CARDI), University of the West Indies, St Augustine, Trinidad and Tobago.

Caribbean News Now, 2015. St Lucia community embarks on initiative to remove sargassum seaweed. Caribb. News Now.

Carter, M., Torabully, K., 2002. Coolitude: An Anthology of the Indian Labour Disapora. Anthem Press, London.

Castel-Branco, C., 2008. Aid Dependency and Development: a Question of Ownership? (Working Paper). Institute of Social and Economic Studies, Maputo, Mozambique. https://doi.org/10.13140/rg.2.1.3516.0408

Central Statistical Office of Saint Lucia, 2018. Depicting facts; Defining the Future [WWW Document]. URL http://stats-lc.com/ (accessed 10.17.18).

CHTA & CAST, 2015. Sargassum: A Resource Guide for the Caribbean. Caribbean Alliance for Sustainable Tourism (CAST) & Caribbean Hotel & Tourism Association (CHTA), Coral Gables Florida.

Cinner, J.E., Aswani, S., 2007. Integrating customary management into marine conservation. Biol. Conserv. 140, 201–216.

Clarke, P., Jupiter, S., 2010. Law, custom and community-based natural resource management in Kubulau Districe (Fiji). Environ. Conserv. 37, 98–106.

Clough, P., 2002. Narratives and fictions in educational research. Open University Press.

Commonwealth Secretariat, 2014. Proceedings Report: The Third Global Biennial conference on Small States: Building Resilience in Small States. Saint Lucia, March 2014. Commonwealth Secretariat, London.

Concrete Blonde, 1989. Little Conversations. I.R.S., Los Angeles.

Conde, M., 1995. Crossing the Mangrove, 1st Anchor Books Ed edition. ed. Bantam Doubleday, New York.

COP, 2018. The Talanoa Dialogue Builds Momentum around the Globe [WWW Document]. COP23 Fiji UN Clim. Change Conf. URL https://cop23.com.fj/talanoa-dialogue-builds-momentum-around-globe/ (accessed 5.4.19).

Coulding, J., Elmqvist, T., Olsson, P., 2002. Living with disturbance: building resilience in social-ecological systems, in: Berkes, F.J., Folke, C. (Eds.), Navigating Social-Ecological Systems: Building Resilience for Complexity and Change. Cambridge University Press, Cambridge, pp. 163–186.

Cova, B., Dalli, D., Zwick, D., 2011. Critical perspectives on consumers' role as 'producers': Broadening the debate on value co-creation in marketing processes. Mark. Theory 11, 231–241. https://doi.org/10.1177/1470593111408171

Covert, H., Koro-Ljungberg, M., 2015. Layers of narratives, images, and analysis. Qual. Res. J. 15, 306. https://doi.org/10.1108/QRJ-08-2014-0042

Creed-Kanashiro, H., Ore, B., Scurrah, M., Gil, A., Penny, M., 2005. Conducting Research in Developing Countries: Experiences of the Informed Consent Process from Community Studies in Peru. J. Nutr. 135, 925–928.

Crossley, M., 2019. Policy transfer, sustainable development and the contexts of education. Comp. J. Comp. Int. Educ. 49, 175–191. https://doi.org/10.1080/03057925.2018.1558811

Crossley, M., Arthur, L., McNess, E. (Eds.), 2016. Revisiting Insider - Outsider Research in Comparative and International Education. Symposium Books, Oxford.
Crossley, M., Sprague, T., 2014. Education for Sustainable Development: Implications for Small Island Developing States (SIDS). Int. J. Educ. Dev. 35, 86–95. https://doi.org/10.1016/j.ijedudev.2013.03.002
Crossley, M., Sprague, T., 2012. The Policy Impact of International Data on Student Achievement: A cautionary note and research agenda. Res. Intell. 22–23.
Crossley, M., Watson, K., 2009. Comparative and international education: policy transfer, context sensitivity and professional development. Oxf. Rev. Educ. 35, 633–649.
Crossley, M., Watson, K., 2003. Comparative and International Research in Education: Globalisation, Context and Difference. RoutledgeFalmer, London.
Dahl, A.L., 1990. Unless and Until: A Baha'i Focus on the Environment. Baha'i Publishing Trust, London.
Davidson-Hunt, I.J., Berkes, F.J., 2002. Nature and society through the lens of resilience: toward a human-in-ecosystem perspective, in: Berkes, F.J., Colding, J.F., Folke, C. (Eds.), Navigating Social-Ecological Systems: Building Resilience for Complexity and Change. Cambridge University Press, Cambridge, pp. 53–82.
Davies, L., 1997. Interviews and the Study of School Management: An International Perspective, in: Crossley, M., Vulliamy, G. (Eds.), Qualitative Educational Research in Developing Countries: Current Perspectives. Garland Publishing, Inc., London, pp. 133–159.
De Souza, K., Kituyi, E., Harvey, B., Leone, M., Murali, K.S., Ford, J.D., 2015. Vulnerability to climate change in three hot spots in Africa and Asia: key issues for policy-relevant adaptation and resilience-building research. Reg. Environ. Change 15, 747–753. https://doi.org/10.1007/s10113-015-0755-8
Debord, G., 2008. A Sick Planet. Seagull Books, Oxford.
Deleuze, G., 1995. Negotiations: 1972-1990. Columbia University Press, New York.
Deleuze, G., Guattari, F., 2013. A Thousand Plateaus. Bloomsbury, London.
Deleuze, G., Parnet, C., 2006. Deleuze Dialogues II. Continuum, London and New York.
Doyle, E., Franks, J., 2015. Sargassum Fact Sheet. Gulf and Caribbean Fisheries Institute, Marathon, FL, USA.
Drever, E., 1997. Using Semi-Structured Interviews in Small-Scale Research: A Teacher's Guide. The Scottish Council for Research in Education, Glasgow.
Eisenstein, C., 2018. What to Do When You Don't Know What to Do. Charles Eisenstein. URL https://charleseisenstein.org/podcasts/charles-eisenstein-daily-podcast/what-to-do-when-you-dont-know-what-to-do/ (accessed 4.19.19).
Eisenstein, C., 2017. The Space Between Stories.
Eisenstein, C., 2013. The More Beautiful World Our Hearts Know is Possible. North Atlantic Books,U.S., Berkeley, California.
Engström, G., Gars, J., 2016. Climatic Tipping Points and Optimal Fossil-Fuel Use. Environ. Resour. Econ. 65, 541–571. https://doi.org/10.1007/s10640-016-0042-2
Ersoy, A., 2017. The Impact of Co-Production. Policy Press, Bristol, UK and Chicago, IL.
Escobar, A., 1998. Whose Knowledge, Whose nature? Biodiversity, Conservation and the Political Ecology of Social Movements. J. Polit. Ecol. 5, 53–82.
Escobar, A., 1995. Encountering Development: The making and unmaking of the Third World. Princeton University Press, Princeton.
Evans, B., Reid, J., 2014. Resilient Life: The Art of Living Dangerously, 1 edition. ed. Polity Press, Cambridge.
Facer, K., Enright, B., 2016. Creating Living Knowledge: The Connected Communities Programme, commuity university relationships and the participatory turn in the production of knowledge. University of Bristol/AHRC Connected Communities, Bristol, UK.
Farrelly, T., Nabobo-Baba, U., 2014. Talanoa as Empathic Apprenticeship. Asia Pac. Viewp. 55, 319–330.

Farrelly, T., Nabobo-Baba, U., 2012. Talanoa as Empathic Research. Presented at the International Development Conference, Auckland, New Zealand.
Fiji Bureau of Statistics, 2018. Fiji Statistics at a Glance [WWW Document]. URL https://www.statsfiji.gov.fj/ (accessed 10.17.18).
Filipe, A., Renedo, A., Marston, C., 2017. The co-production of what? Knowledge, values, and social relations in health care. PLOS Biol. 15, e2001403. https://doi.org/10.1371/journal.pbio.2001403
Findhorn Foundation, 2016. Findhorn New Story Community [WWW Document]. Findhorn Found. URL https://www.findhorn.org/new-story-community/ (accessed 4.19.19).
Fischer, F., 2000. Citizens, Experts, and the Environment: The Politics of Local Knowledge. Duke University Press.
Folke, C., 2006. Resilience: The emergence of a perspective for social-ecological systems analyses. Glob. Environ. Change 16, 253–267. https://doi.org/10.1016/j.gloenvcha.2006.04.002
Gero, A., Méheux, K., Dominey-Howes, D., 2011. Integrating disaster risk reduction and climate change adaptation in the Pacific. Clim. Dev. 3, 310–327. https://doi.org/10.1080/17565529.2011.624791
Gillard, R., Gouldson, A., Paavola, J., Alstine, J.V., 2016. Transformational responses to climate change: beyond a systems perspective of social change in mitigation and adaptation. Wiley Interdiscip. Rev. Clim. Change 7, 251–265. https://doi.org/10.1002/wcc.384
Greenbaum, T., 1998. The Handbook for Focus Group Fesearch, 2nd ed. Sage Publications, London.
Gunderson, L., 2010. Ecological and Human Community Resilience in Response to Natural Disasters. Ecol. Soc. 15, 18.
Hageneder, F., 2005. The Living Wisdom of Trees. Duncan Baird Publishers, London.
Hageneder, F., 2001. The Spirit of Trees: Science, Symbiosis and Inspiration. Continuum, New York.
Hamilton, C., 2017. Defiant Earth: The Fate of Humans in the Anthropocene, 1 edition. ed. Polity, Cambridge, UK ; Malden, MA.
Harvey, F., 2017. Bonn climate talks must go further than Paris pledges to succeed. The Guardian.
Hau'ofa, E., 2008a. Anthropology and Pacific Islanders, in: We Are The Ocean. University of Hawai'i Press, Honolulu, pp. 3–10.
Hau'ofa, E., 2008b. The New South Pacific Society: Integration and Independence, in: We Are The Ocean. University of Hawai'i Press, Honolulu, pp. 11–23.
Hau'ofa, E., 2008c. Our Sea of Islands, in: We Are The Ocean. University of Hawai'i Press, Honolulu, pp. 27–40.
Hau'ofa, E., 2008d. Epeli Hau'ofa Interviewed by Subramani, in: We Are The Ocean. University of Hawai'i Press, Honolulu, pp. 136–153.
Hau'ofa, E., 1983. Tales of the Tikongs. Longman Paul, Auckland, New Zealand.
Hellawell, D., 2006. Inside–out: analysis of the insider–outsider concept as a heuristic device to develop reflexivity in students doing qualitative research. Teach. High. Educ. 11, 483–494. https://doi.org/10.1080/13562510600874292
Hoegh-Guldberg, O., Mumby, P.J., Hooten, A.J., Steneck, R.S., Greenfield, P., Gomez, E., Harvell, C.D., Sale, P.F., Edwards, A.J., Caldeira, K., Knowlton, N., Eakin, C.M., Iglesias-Prieto, R., Muthiga, N., Bradbury, R.H., Dubi, A., Hatziolos, M.E., 2007. Coral Reefs Under Rapid Climate Change and Ocean Acidification. Science 318, 1737–1742. https://doi.org/10.1126/science.1152509
Hogarth, P., 2007. The Biology of Mangroves and Seagrasses, Second Edition. ed, The Biology of Habitats. Oxford University Press, New York.
Holman-Jones, S., 2005. Auto-ethnography: Making the personal political, in: Denzin, N., Lincoln, Y. (Eds.), Sage Handbook of Qualitative Research. Sage, Thousand Oaks, CA, pp. 763–791.
Huberman, M., 1995. Working with Life History Narratives, in: McEwan, H., Egan, K. (Eds.), Narratives in Teaching, Learning and Research. Teachers College Press, New York.

Huntington, H.P., 2000. Using Traditional Ecological Knowledge in Science: Methods and Applications. Ecol. Appl. 10, 1270–1274. https://doi.org/10.1890/1051-0761(2000)010[1270:UTEKIS]2.0.CO;2

Intergovernmental Panel on Climate Change, 2018. Global Warming of 1.5 °C (Summary for Policymakers No. IPCC SR1.5). IPCC.

International Tsunami Information Center, 2017. Frequently Asked Questions - Tsunami [WWW Document]. URL http://itic.ioc-unesco.org/index.php?option=com_content&view=article&id=1133&Itemid=2155 (accessed 9.20.17).

IPCC, 2018. Special Report: Global Warming of 1.5C, in: Masson-Delmotte, V., Zhai, P., Pörtner, H.O., Roberts, D., Skea, J., Shukla, P.R., Pirani, A., Moufouma-Okia, W., Péan, C., Pidcock, R., Connors, S., Matthews, J.B.R., Chen, Y., Zhou, X., Gomis, M.I., Lonnoy, E., Maycock, Tignor, M., Waterfield, T. (Eds.), Global Warming of 1.5C. An IPCC Special Report on the Impacts of Global Warming of 1.5C above Pre-Industrial Levels and Related Global Greenhouse Gas Emission Pathways, in the Context of Strengthening the Global Response to the Threat of Climate Change, Sustainable Development and Efforts to Eradicate Poverty. World Meterological Organization, Geneva, Switzerland, p. 32.

Irwin, G., 2017. Pacific Migrations - Into Remote Oceania: Lapita people [WWW Document]. Te Ara Encycl. N. Z. URL http://www.TeAra.govt.nz/en/pacific-migrations/page-3 (accessed 9.21.17).

Israel, M., Hay, I., 2006. Research ethics for social scientists: between ethical conduct and regulatory compliance. SAGE, London.

Janssen, M.A., Schoon, M.L., Ke, W., Borner, K., 2006. Scholarly networks on resilience, vulnerability and adaptation within the human dimensions of global environmental change. Glob. Environ. Change 16, 240–252.

Jasanoff, S. (Ed.), 2004. States of Knowledge: The Co-Production of Science and the Social Order. Routledge, London and New York.

Jolly, D., Berkes, F., Castleden, J., Nichols, T., 2002. We Can't Predict the Weather Like We Used to: Inuvialuit Observations of Climate Change, Sachs Harbour, Western Canadian Artic, in: Krupnik, I., Jolly, D. (Eds.), The Earth Is Faster Now: Indigenous Observations of Artic Environmental Change. ARCUS Artic Research Consortium of the United States, Fairbanks, Alaska, pp. 92–125.

Jung, C.G., 1963. Memories, Dreams, Reflections. Pantheon Books.

Jupiter, S., Egli, D.P., 2011. Ecosystem-Based Management in Fiji: Successes and Challenges after Five Years of Implementation. J. Mar. Biol. 2011. http://dx.doi.org/10.1155/2011/940765

Kafka, F., Brod, M., 1991. The blue octavo notebooks. Exact Change, Cambridge, MA.

Kan, G., 2016. This Paper Boat. Auckland University Press, Auckland, New Zealand.

Kindred, G., 2004. Earth Wisdom. Hay House, London.

Kinzig, A.P., 2001. Bridging Disciplinary Divides to Address Environmental and Intellectual Challenges. Ecosystems 4, 709–715. https://doi.org/10.1007/s10021-001-0039-7

Kofinas, G., 2002. Community Contributions to Ecological Monitoring: Knowledge Co-production in U.S.-Canada Artic Borderlands, in: Krupnik, I., Dyanna, J. (Eds.), The Earth Is Faster Now: Indigenous Observations of Artic Environmental Change. ARCUS Artic Research Consortium of the United States, Fairbanks, Alaska, pp. 54–91.

Koya Vaka'uta, C.F., Sipeli, P.D., Vaka'uta, L. (Eds.), 2013. Sokota: Art, Health, Wellness. Fiji National University, Suva, Fiji.

Koya Vaka'uta, C.F., Sprague, T., Crossley, M., 2015. Towards Hybrid Research Methodologies for Teacher Education Research in the Pacific, in: Contextual Values,Teacher Education and Sustainable Futures: Learning from Pacific Experience and Perspectives. Presented at the 13th UKFIET International Conference on Education and Development, Oxford, UK.

Kransy, M.E., Lundholm, C., Plummer, R., 2010. Resilience in social-ecological systems: the roles of learning and education. Environ. Educ. Res. 16, 463–474.

Krueger, R.A., 1994. Focus Groups: A Practical Guide for Applied Research, 2nd ed. ed. Sage, Thousand Oaks.
Lagi, R., 2015. Na Bu : an explanatory study of indigenous knowledge of climate change education in Ovalau, Fiji (Ph.D.). The University of the South Pacific, Suva, Fiji.
Langellier, K., Peterson, E., 2004. Storytelling In Daily Life: Performing Narrative. Temple University Press.
Lejano, R.P., Tavares-Reager, J., Berkes, F., 2013. Climate and narrative: Environmental knowledge in everyday life. Environ. Sci. Policy 31, 61–70. https://doi.org/10.1016/j.envsci.2013.02.009
Lessing, D., 1972. The Golden Notebook, 5th Edition. ed. Michae Joseph LTD, London.
Lewis, S.L., Maslin, M.A., 2015. Defining the Anthropocene. Nature 519, 171–180. https://doi.org/10.1038/nature14258
Lewis-Bynoe, D. (Ed.), 2014. Building the Resilience of Small States: A Revised Framework. Commonwealth Secretariat, London.
Lincoln, Y.S., Guba, E.G., 1985. Naturalistic inquiry. SAGE, London.
Loreau, M., de Mazancourt, C., 2013. Biodiversity and ecosystem stability: a synthesis of underlying mechanisms. Ecol. Lett. 16, 106–115. https://doi.org/10.1111/ele.12073
Louisy, D.P., 2014. Living on the Sharp end of Environmental Uncertainty in a Small Island Developing State: Challenges and Strategies from Saint Lucia and the Caribbean.
Louisy, P., 1997. Dilemmas of insider research in a small country setting, in: Crossley, M., Vulliamy, G. (Eds.), Qualitative Educational Research in Developing Countries: Current Perspectives. Garland, New York and London, pp. 199–220.
Lowenthal, D., 1987. Social Features, in: Clarke, C.G., Payne, A. (Eds.), Politics, Security, and Development in Small States. Allen & Unwin, London.
Lyons, N., LaBoskey, V.K. (Eds.), 2002. Narrative Inquiry in Practice: Advancing the Knowledge of Teaching. Teachers College Press, New York.
Marchand, T.H.J., 2003. A possible explanation for the lack of explanation; Or, "why the master builder can't explain what he knows": Introducing informational atomism against a "definitional" definition of concepts, in: Pottier, J., Bicker, A., Sillitoe, P. (Eds.), Negotiating Local Knowledge: Power and Identity in Development. Pluto Press, Sterling, VA, pp. 30–50.
Marks, J., 1998. Gilles Deleuze: Vitalism and Multiplicity. Pluto Press, London.
Martin, V., 2011. Developing a Narrative Approach to Healthcare Research. Radcliffe Publishing, Oxon.
Maslow, A.H., 1943. A theory of human motivation. Psychol. Rev. 50, 370–396. https://doi.org/10.1037/h0054346
Maurice Ile Durable, n.d. Maurice Ile Durable [WWW Document]. MID. URL http://mid.govmu.org/portal/sites/mid/aboutMID.htm (accessed 10.22.18).
Mauser, W., Klepper, G., Rice, M., Schmalzbauer, B.S., Hackmann, H., Leemans, R., Moore, H., 2013. Transdisciplinary global change research: the co-creation of knowledge for sustainability. Curr. Opin. Environ. Sustain., Open issue 5, 420–431. https://doi.org/10.1016/j.cosust.2013.07.001
McNess, E., Arthur, L., Crossley, M., 2015. "Ethnographic Dazzle" and the construction of the "Other": revisiting dimensions of insider and outsider research for international and comparative education. Compare 45, 295–316.
Mendus, A.R.B., 2017. A rhizomatic edge-ucation : "searching for the ideal school" through school tourism and performative autoethnographic-we (Ph.D.). School of Education and Social Sciences, The University of Hull, Hull, UK.
Mignolo, W.D., 2011. The Darker Side of Western Modernity: Global Futures, Decolonial Options. Duke University Press, Durham: NC.
Milledge, J.J., Harvey, P.J., 2016. Golden Tides: Problem or Golden Opportunity? The Valorisation of Sargassum from Beach Inundations. J. Mar. Sci. Eng. 4, 60. https://doi.org/10.3390/jmse4030060
Milosz, C., 2005. New and Collected Poems 1931-2001. Penguin, London.

Moezzi, M., Janda, K.B., Rotmann, S., 2017. Using stories, narratives, and storytelling in energy and climate change research. Energy Res. Soc. Sci. 31, 1–10. https://doi.org/10.1016/j.erss.2017.06.034

Moller, H., Lyver, P., Bragg, C., Newmann, J., Clucas, R., Fletcher, D., Kitson, J., McKechnie, S., Scott, D., Rakiura Titi Islands Administering Body, 2009. Guidelines for cross-cultural participatory action research partnerships: a case study of a customary seabird harvest in New Zealand. N. Z. J. Zool. 36, 211–241.

Monbiot, G., 2017. Out of the Wreckage: A New Politics for an Age of Crisis. Verso, London ; New York.

Morrison, A.E., Cochrane, E.E., Rieth, T., Horrocks, M., 2017. Archaeological and sedimentological data indicate Lapita settlement on a newly formed coastal plain: Tavua Island, Mamanuca Group, Fiji. The Holocene 0959683617714599. https://doi.org/10.1177/0959683617714599

Mulligan, M., 2003. Feet to the ground in storied landscapes: Disrupting the colonial legacy with a poetic politics, in: Adams, W., Mulligan, M. (Eds.), Decolonzing Nature: Strategies for Conservation in a Postcolonial Era. EarthScan, London, pp. 268–289.

Mustonen, T., 2002. Indigenous Views on Climate Change: A Circumpolar Perspective, in: Krupnik, I., Jolly, D. (Eds.), The Earth Is Faster Now: Indigenous Observations of Arctic Environmental Change. Frontiers in Polar Social Science. ARCUS Artic Research Consortium of the United States, Fairbanks, Alaska, p. 350.

Myers & Briggs Foundation, 2019. The Myers & Briggs Foundation - MBTI® Basics [WWW Document]. MBTI Basics. URL https://www.myersbriggs.org/my-mbti-personality-type/mbti-basics/home.htm?bhcp=1 (accessed 5.4.19).

Nabobo-Baba, U., 2006. Knowing and Learning: An Indigenous Fijian Approach. Institute of Pacific Studies, The University of the South Pacific, Suva, Fiji.

Nabobo-Baba, U., 2004. Research and Pacific Indigenous Peoples: Silenced Pasts and Challenged Futures, in: Baba, T., Mahina, 'Okusitino, Williams, N., Nabobo-Baba, U. (Eds.), Researching the Pacific and Indigenous Peoples: Issues and Perspectives. Centre for Pacific Studies, The University of Auckland, Auckland, New Zealand, pp. 17–33.

Nainoca, W.U., 2011. The influence of the Fijian way of life (bula vakavanua) on community-based marine conservation (CBMC) in Fiji, with a focus on social capital and traditional ecological knowledge (TEK) (Ph.D.). Massey University, New Zealand.

NASA Earth Observatory, 2016. Tropical Cyclone Winston Slams Fiji [WWW Document]. URL https://earthobservatory.nasa.gov/images/87562/tropical-cyclone-winston-slams-fiji (accessed 10.17.18).

Negev, M., Teschner, N., 2013. Rethinking the relationship between technical and local knowledge: Toward a multi-type approach. Environ. Sci. Policy, SI: Environmental and Developmental Discourses: Technical knowledge, discursive spaces and politics 30, 50–59. https://doi.org/10.1016/j.envsci.2012.10.011

Nunn, P., 2016. Climate Wars. Sapiens Anthropol. Everything Hum. URL https://www.sapiens.org/archaeology/climate-change-sea-level-fiji/ (accessed 9.20.17).

Ochs, E., Capps, L., 2009. Living Narrative: Creating Lives in Everyday Storytelling. Harvard University Press.

Ofori, M., 2016. Rhizome [WWW Document]. JRank Sci. Philos. URL http://science.jrank.org/pages/5867/Rhizome.html (accessed 11.7.16).

Olibert, P., 2014. Government officials advocate community effort to rid coast of seaweed [WWW Document]. Gov. St. Lucia. URL http://www.govt.lc/news/government-officials-advocate-community-effort-to-rid-coast-of-seaweed (accessed 10.3.17).

Ostrom, E., 1996. Crossing the great divide: Coproduction, synergy, and development. World Dev. 24, 1073–1087. https://doi.org/10.1016/0305-750X(96)00023-X

Paschen, J.-A., Ison, R., 2014. Narrative research in climate change adaptation—Exploring a complementary paradigm for research and governance. Res. Policy 43, 1083–1092. https://doi.org/10.1016/j.respol.2013.12.006

Payne, A.F., Storbacka, K., Frow, P., 2008. Managing the co-creation of value. J. Acad. Mark. Sci. 36, 83–96. https://doi.org/10.1007/s11747-007-0070-0
Pelling, M., 2011. Adaptation to Climate Change: From resilience to transformation. Routledge, New York.
Pestoff, V., Brandsen, T., 2013. Co-production: The Third Sector and the Delivery of Public Services. Routledge.
Pinkola Estes, C., 2008. Women Who Run with the Wolves: Contacting the Power fo the Wild Woman. Rider, London.
Plant Rhizome Project, n.d. What is a Rhizome? [WWW Document]. Plant Rhizomes. URL http://www.plantrhizome.org/about/whatis.html (accessed 11.7.16).
Plumwood, V., 2003. Decolonizing relationships with nature, in: Adams, W.M., Mulligan, M. (Eds.), Decolonising Nature: EarthScan, London & Sterling, VA, pp. 51–78.
Powney, J., Watts, M., 1987. Interviewing in educational research. Routledge, London.
Prescott, S.M., 2008. Using Talanoa in Pacific Business Research in new Zealand: Experiences with Tongan Entrepreneurs. Altern. Int. J. Indig. Peoples 4, 127–148. https://doi.org/10.1177/117718010800400111
Pryke, J., 2013. The Pacific's aid boom. Devpolicy Blog Dev. Policy Cent. URL http://www.devpolicy.org/the-pacifics-aid-boom-02092013/ (accessed 5.5.19).
Quijano, A., 2007. Coloniality and Modernity/Rationality. Cult. Stud. 21, 168–78.
Reece, J., 2015. Losing the plot: an exploration into the process of narrative inquiry through deteceive fiction (EdD). University of Bristol, Bristol, UK.
Reed, A.W., Hames, I. (Eds.), 1967a. Ravouvou the Dart Thrower, in: Myths and Legends of Fiji and Rotuma. Reeds Books, Auckland, pp. 61–62.
Reed, A.W., Hames, I., 1967b. Myths & Legends of Fiji & Rotuma, Students Edition. ed. Reeds Books, Auckland.
Renaud, F.G., Syvitski, J.P., Sebesvari, Z., Werners, S.E., Kremer, H., Kuenzer, C., Ramesh, R., Jeuken, A., Friedrich, J., 2013. Tipping from the Holocene to the Anthropocene: How threatened are major world deltas? Curr. Opin. Environ. Sustain., Aquatic and marine systems 5, 644–654. https://doi.org/10.1016/j.cosust.2013.11.007
Republic of Fiji, 2014. Second National Communication to the United Nations Framework Convention on Climate Change. Ministry of Foreign Affairs, Suva, Fiji.
Resonance, n.d. . Am. Herit. Sci. Dict.
Reyers, B., Nel, J.L., O'Farrell, P., Sitas, N., Nel D.C., 2015. Navigating complexity through knowledge coproduction: Mainstreaming ecosystem services into disaster risk reduction. Proc. Natl. Acad. Sci. United Sates Am. 112, 7362–8. https://doi.org/10.1073/pnas.1414374112
Richardson, L., Adams St Pierre, E., 2007. Writing: A method of Inquiry, in: Denzin, N.K., Lincoln, Y. (Eds.), The Sage Handbook of Qualitative Research. SAGE Publications, London, pp. 959–978.
Riessman, C.K., 1993. Narrative Analysis. SAGE.
Robinson-Pant, A., 2005. Cross-Cultural Perspectives on Educational Research, Conducting Educational Research. Open University Press, Maidenhead.
Ronai, C.R., 1995. Multiple Reflections of Child Sex Abuse: An Argument for a Layered Account. J. Contemp. Ethnogr. 23, 395–426. https://doi.org/10.1177/089124195023004001
Ruiz, D.M., 2018. The Four Agreements. Amber-Allen Publishing, Incorporated, San Rafael, Calif.
Said, E., 1993. Culture and Imperialism. A.A. Knopf, New York.
Said, E., 1979. Orientalism. Vintage Books, New York.
Santos, B. de S., 2014. Epistemologies of the South: Justice against Epistemicide. Routledge, London and New York.
Santos, B.S., 2017. Decolonising the University: The Challenge of Deep Cognitive Justice. Cambridge Scholars Publishing, Cambridge.
Santos, B.S. (Ed.), 2008. Another Knowledge is Possible: Beyond Northern Epistemologies, Reinventing Social Emancipation: Toward New Manifestos. Verso, London.

Scrase, T.J., 2014. Social Justice and Third World Education. Routledge.
Selkoe, K.A., Blenckner, T., Caldwell, M.R., Crowder, L.B., Erickson, A.L., Essington, T.E., Estes, J.A., Fujita, R.M., Halpern, B.S., Hunsicker, M.E., Kappel, C.V., Kelly, R.P., Kittinger, J.N., Levin, P.S., Lynham, J.M., Mach, M.E., Martone, R.G., Mease, L.A., Salomon, A.K., Samhouri, J.F., Scarborough, C., Stier, A.C., White, C., Zedler, J., 2015. Principles for managing marine ecosystems prone to tipping points. Ecosyst. Health Sustain. 1, 1–18. https://doi.org/10.1890/EHS14-0024.1
Shaikh, A., Kauppi, C., 2010. Deconstructing Resilience: Myriad Conceptualizations and Interpretations. Int. J. Arts Sci. 3, 155–176.
Shilliam, R., 2015. The Black Pacific: Anti-Colonial Struggles and Oceanic Connections, Theory for a Global Age. Bloomsbury Academic, London.
Silova, I., 2009. Varieties of educational transformation: The post-socialist states of Central/Southeastern Europe and the former Soviet Union, in: Cowen, R., Kazamias, K.M. (Eds.), International Handbook of Comparative Education. Springer, Netherlands, pp. 295–320.
Skeet, J., 2014. On the Flyleaves of Modernisim: Deleuze and Guattari's Kafka, in: Gontarski, S.E., Ardoin, P., Mattison, L. (Eds.), Understaning Deleuze, Understanding Modernism. Bloomsbury Academic, London, pp. 61–74.
Souza, M.K., 2012. Ancient Wisdom, New Harmonies: M. Kalani Souza at TEDxSF. Repertoire Productions, San Francisco.
Sparkes, A., 2001. Autoethnography: Self-Indulgence or Something More, in: Bochner, A., Ellis (Eds.), Ethnographically Speaking. Alta Mira Press, Walnut Creek, CA, pp. 209–231.
Speedy, J., 2008a. Narrative Inquiry & Psychotherapy. Palgrave Macmillan, New York.
Speedy, J., 2008b. Narrative Ethics: Trustworthiness, Accountability and "Writing Good Stories," in: Narrative Inquiry & Psychotherapy. Palgrave Macmilan, Houndmills, pp. 44–58.
Speedy, J., 2007. Creating and Performing Auto-ethnographies: Some Unfortunate Lapses - a Very Short Story, in: Narrative Inqiry & Psychotherapy. Palgrave/Macmillan, Houndmills, pp. 155–166.
Speedy, J., Bainton, D., Brown, L., Martin, V., Sakellariadis, A., Williams, S., Wilson, S., 2010. Encountering "Gerald": Experiments With Meandering Methodologies and Experiences Beyond Our "Selves" in a Collaborative Writing Group. Qual. Inq. 16, 894–901. https://doi.org/10.1177/1077800410383130
Spivak, G., 1988. Can the subaltern speak?, in: Nelson, C., Crossberg, L. (Eds.), Reprinted in Marxist Interpretations of Culture. Macmillan Education, Basingstoke, pp. 271–313.
Sprague, T., 2017. Listening to the Mangrove: local conceptualisations of island resilience in the face of environmental change. Presented at the 15th Islands of the World Conference - Small Island Communities: Models for Global Survival, Kangaroo Island, Australia.
Sprague, T., 2016. Learning from the Sharp End: Vulnerability and Resilience in Small Island States. Presented at the 19 Conference of Commonwealth Education Ministers Civil Society Forum on Education and Sustainable Development in Small States, Nassau, Bahamas.
Sprague, T., 2015. Education for Sustainable Development: The Rising Place of Resilience and Lessons from Small Island Developing States, in: McGrath, S., Gu, Q. (Eds.), Routledge International Handbook on Education and Development. Routledge, London, pp. 50–62.
Sprague, T., 2008. High Stakes in a Small State: EFL Teachers' Perceptions and Understandings of the Unified School-Leaving and University-Entrance Examination Policy in the Small, Transitional State of Armenia (Unpublished MEd Dissertation). University of Bristol.
Sprague, T., Crossley, M., Holmes, K., 2014. At the sharp end: Education for sustainable development in small states, in: Jones-Parry, R., Robertson, A. (Eds.), Commonwealth Education Partnerships 2014-15. Nexus/Commonwealth Secretariat, Cambridge, pp. 298–304.

Statistics Mauritius, 2018. Population and Vital Statistics [WWW Document]. URL http://statsmauritius.govmu.org/English/Pages/POPULATION--And-VITAL-STATISTICS.aspx (accessed 10.17.18).

Stockholm Resilience Centre, 2016. News about Tipping Points [WWW Document]. Stockh. Resil. Cent. Website Univ. Stockh. URL /news--events/topics-news.html (accessed 4.16.19).

Sunseri, L., 2007. Indigenous Voice Matters: Claiming our Space through Decolonizing Research. Junctures J. Themat. Dialogue 9, 92–106.

Tecco, N., Girgenti, V., Cristiana, P., Sottile, F., 2014. THE ROLE OF DIVERSITY AND DIVERSIFICATION FOR RESILIENT AGRICULTURAL SYSTEMS. Presented at the Imagining cultures of cooperation: Universities networking to face the new development challenges - III CUCS Congress, Turin.

Thaman, K., 2009. Towards cultural democracy in teaching and learning: with specific references to Pacific Island Nations (PINs). Int. J. Scholarsh. Teach. Learn. 3.

Thaman, K.H., 1997. Kakala: A Pacific concept of teaching and learning. Presented at the Australian College of Education National Conference, Cairns.

The Locally-Managed Marine Area (LMMA) Network, 2016. Tabu in Fiji [WWW Document]. URL http://lmmanetwork.org/what-we-do/traditional-practices/tabu-in-fiji/ (accessed 10.28.18).

Tompkins, E., Adger, W.N., 2004. Does Adaptive Management of Natural Resources Enhance Resilience to Climate Change? Ecol. Soc. 9. https://doi.org/10.5751/ES-00667-090210

Trahar, S., Yu, W.M., 2015. Using Narrative Inquiry for Educational Research in the Asia Pacific. Routledge.

Tuhiwai Smith, L., 2012. Decolonizing Methodologies: Research and Indigenous Peoples, Second Edition. ed. Zed Books, London and New York.

Tuhiwai Smith, L., 2004. Building Research Capability in the Pacific, for the Pacific and by Pacific Peoples, in: Baba, T., Mahina, 'Okusitino, Williams, N., Nabobo-Baba, U. (Eds.), Researching the Pacific and Indigenous Peoples: Issues and Perspectives. Centre for Pacific Studies, The University of Auckland, Auckland, New Zealand, pp. 4–17.

Tully, J., 1995. Strange Multiplicity. Cambridge University Press, Cambridge.

UNDESA, 2014a. Proposal for Sustainable Development Goals [WWW Document]. U. N. Sustain. Dev. Knowl. Platf. URL http://sustainabledevelopment.un.org/sdgsproposal.html (accessed 11.25.14).

UNDESA, 2014b. Deveoping a Vulnerability-Resilience Profile: A Handbook for Small Island Developing States.

UNDP, 2016. New Framework to build resilience to climate change and disasters in the Pacific Islands [WWW Document]. UNDP Pac. URL http://www.pacific.undp.org/content/pacific/en/home/presscenter/pressreleases/2016/09/16/new-framework-to-build-resilience-to-climate-change-and-disasters-in-the-pacific-islands.html (accessed 4.24.19).

United Nations, 2014. Small Island Developing States Accelerated Modalities of Action (Samoa Pathway).

United Nations, 2005a. Small Islands Big Stakes [WWW Document]. Maurit. Conf. Highlights. URL http://www.un.org/smallislands2005/ (accessed 10.22.18).

United Nations, 2005b. Mauritius Strategy for the Further Implementation of the Programme of Action for Sustainable Development in Small Island Developing States (No. A/CONF.207/CRP.7). United Nations, Port Louis, Mauritius.

United Nations, 1994. The Programme of Action for the Sustainable Development of SIDS.

Vaioleti, T.M., 2006. Talanoa Research Methodology: A Developing Position on Pacific Research. Waikato J. Educ. 12, 21–34.

Van Tilburg, H., Watson, T., Faria, K., Hoomanawanui, K., Ho-Lastimosa, I., Ritte, W., Maly, K., Naho'opi'i, M., Horcajo, K., Kaupiko, K., Ball, D., 2017. A Guidance Document for Characterizing Native Hawiian Cultural Landscapes. US Department of the Interior, Bureau of Ocean Energy Management, Pacific OCS Region, Camarillo, CA.

Van Toorn, P., Toorn, P.V., 2006. Writing Never Arrives Naked: Early Aboriginal Cultures of Writing in Australia. Aboriginal Studies Press, Canberra.

Vela-Almeida, D., Brooks, G., Kosoy, N., 2015. Setting the limits to extraction: A biophysical approach to mining activities. Ecol. Econ. 119, 189–196. https://doi.org/10.1016/j.ecolecon.2015.09.001

Watts, A., 1994. Talking Zen. Electronic University, New York.

Webster, L., Mertova, P., 2007. Using Narrative Inquiry as a Research Method. Routledge, Oxon.

Wesley-Smith, T., Madraiwiwi, R.J., Teaiwa, T., White, G., Kabutaulaka, T., Winduo, S.E., Naidu, V., Hereniko, V., 2010. Epeli's Quest: Essays in Honor of Epeli Hau'ofa. Contemp. Pac. 22, 101–123. http://dx.doi.org/10.1353/cp.0.0102

Wikipedia, 2018. Cyclone Pam [WWW Document]. Cyclone Pam. URL https://en.wikipedia.org/wiki/Cyclone_Pam (accessed 10.28.18).

Willis, R., 2018. The use of composite narratives to present interview findings. Qual. Res. 146879411878771. https://doi.org/10.1177/1468794118787711

Wohlleben, P., 2017. The Hidden Life of Trees. William Collins, London.

Yost, G., 2016. Fiji: Innate Intelligence Through Music & Dance.

Zimmerman, E., 2005. Valuing Traditional Ecological Knowledge: Incorporating the Experiences of Indigenous People into Global Climate Change Policies. N. Y. Univ. Environ. Law J. 13, 803–846.

These words
aren't the words I first wanted
or ever expected.
Passed through a yet hollowing reed,
they became the words
that needed to be.